FROM 'AFFLICTED' TO ACTIVISTS

Structural Violence and Climate Change Discourse in the States of Pernambuco and Paraíba in Northeast Brazil

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Tiivistelmä – Referat – Abstract

This study approaches the problem of poverty in the hinterlands of Northeast Brazil through the concept of structural violence, linking the environmental threats posed by climate change, especially those related to droughts, to the broader social struggles in the region. When discussions about potentials and rights are incorporated into the problematic of poverty, a deeper insight is obtained regarding the various factors behind the phenomenon. It is generally believed that climate change is affecting the already marginalized and poor more than those of higher social standing, and will increasingly do so in the future.

The data for this study was collected during a three month field work in the states of Pernambuco and Paraíba in Northeast Brazil. The main methods used were semi-structured interviews and participant observation, including attending seminars concerning climate change on the field. The focus of the work is to compare both layman and expert perceptions on what climate change is about, and question the assumptions about its effects in the future, mainly that of increased numbers of 'climate refugees' or people forced to migrate due to changes in climate. The focus on droughts, as opposed to other manifestations of climate change, arises from the fact that droughts are not only phenomena that develop over a longer time span than floods or hurricanes, but is also due to the historical persistence of droughts in the region, and both the institutional and cultural linkages that have evolved around it.

The instances of structural violence that are highlighted in this study; the drought industry, land use, and the social and power relations present in the region, including those between the civil society, the state and the private agribusiness sector, all work against a backdrop of symbolic and moral realms of value production, where relations between the different actors are being negotiated anew with the rise of the climate change discourse. The main theoretical framework of the study consists of Johan Galtung's and Paul Farmer's theory of structural violence, Ulrich Beck's theory of the risk society, and James Scott's theory of everyday peasant resistance.

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Climate change, structural violence, Brazil

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Tiivistelmä – Referat – Abstract

Tutkielma lähestyy köyhyysongelmaa Koillis-Brasilian takamailla rakenteellisen väkivallan teorian valossa. Ilmastonmuutokseen liittyviä ympäristöriskejä, erityisesti kuivuusongelmaa, tarkastellaan osana suurempia sosiaalisia epäkohtia. Köyhyysongelma näyttäytyy monisyisempänä, kun otetaan huomioon sen taustalla vaikuttavat diskurssit potentiaaleista ja oikeuksista. Ilmastonmuutoksen oletetaan vaikuttavan ensimmäisenä jo marginalisoituneisiin ja köyhiin ihmisryhmiin, ja tämän tendenssin oletetaan pahentuvan tulevaisuudessa.

Aineisto tutkimusta varten kerättiin kolmen kuukauden kenttätyön aikana Pernambucon ja Paraíban osavaltioissa Koillis-Brasiliassa. Pääasiallinen aineistonkeruumetodi oli semi-strukturoidut haastattelut, sekä osallistuva havainnointi. Työn painopiste on vertailla sekä maallikoiden että asiantuntijoiden näkemyksiä ilmastonmuutoksesta, ja kyseenalaistaa tiettyjä oletuksia tulevaisuutta koskien, kuten 'ilmastopakolaisten' määrän lisääntymistä jatkossa. Tutkimuksessa keskitytään erityisesti alueella vallitsevaan kuivuusongelmaan, jonka ympärille ovat muodostuneet pitkälle juontavat historialliset ja kulttuuriset merkitykset.

Rakenteellista väkivaltaa tarkastellaan tutkielmassa kolmen pääaspektin kautta. Nämä ovat "kuivuusteollisuus", maankäyttö, sekä näiden taustalla vaikuttavat sosiaaliset- ja valtasuhteet alueella. Eri toimijoiden, kuten kansalaisyhteiskunnan, valtion sekä suurten yksityisten maatalousfirmojen toimintaa tutkitaan ottaen huomioon moraalisen ja symbolisen taustan vaikutus, areena, jolla toimijoiden välisiä valtasuhteita uudelleenmääritellään ilmastonmuutosdiskurssin kautta. Tutkielman teoreettinen viitekehys koostuu Johan Galtungin ja Paul Farmerin rakenteellisen väkivallan teoriasta, Ulrich Beckin riskiyhteiskunnan teoriasta, sekä James Scottin arkipäiväisen talonpoikaisresistanssin teoriasta.

Avainsanat – Nyckelord – Keywords
Ilmastonmuutokset, rakenteellinen väkivalta, Brasilia

CONTENTS

1 INTRODUCTION

Northeast Brazil, many say, has the best gene pool in the world, for only a superhuman can survive droughts, floods, politicians, infant mortality, and foreign researchers. Colonialism, and slavery never ended here; they just earned more flattering names. (Arons 2004, 60).

This study aims at anthropologically understanding and analyzing one of the most challenging plagues of mankind: poverty. It is also an attempt to defend the importance of applied anthropology, towards which, some argue, there seems to be a certain disdain, especially concerning the field of development and poverty issues. 'Development anthropologists' have been accused of reinforcing ethnocentric and dominating models of development, and of reiterating, in the name of cultural sensitivity, conventional views of modernization, social change, and the Third World, placing anthropology at the service of power. (Escobar 1991; Stonich ref. Brosius 1999, 298). Being, however, particularly interested in these themes myself, I follow in the footsteps of Stonich and other critics in challenging this disdain – if focusing on poverty and wanting to use anthropological knowledge to come up with ways of alleviating it will inevitably lead into 'bad science', what hope lies there for those of us who want to focus on these very issues?

Poverty takes many forms, and has a wide array of conceptualizations. The form of poverty that I focus on in this work is closely tied with the theoretical concept of structural violence, that is, poverty not as material lack but as needs-deprivation and constraints to filling *potentials*. I have also decided to observe the links between structural violence and ecological hazards, focusing on the discourse on climate change. As Ulrich Beck states, "Ecology is guilty of forgetting about society, just as social science and social theory are predicated on the forgetting of ecology. The terrain has been staked out by the concepts both of system and of environment. The proponents of each disdain the other, without noticing that it is public awareness that preselects ecological questions via a historical aggregate of society and nature, in which so-called 'ecological hazards' are always systemic hazards." (Beck 1995, 40).

In recent decades the trend of linking environmental concerns to studies of poverty has become more and more pronounced in various fields. Development projects nowadays have a number of cross-cutting themes, such as gender issues, human rights issues, and environmental issues incorporated into their agendas. This tendency also shows in anthropological studies, in which there has been a notable shift from the cultural ecology of the 1950s and 1960s to the environmental anthropology of the present. Among the most prominent works of the earlier cultural ecology are those of Julian Steward, who focused on 'multilinear evolution', that is multiple pathways of adaptation to a certain environment over time. (Sponsel 2007). Another line of research originating in the 1950s and 60s was ethnoecology, highlighting the classificatory systems and vocabulary used by different cultures to view their environment.

Towards the 1980s, a more materialistic paradigm took hold in the study of ecological anthropology, with the works of scholars such as Roy Rappaport and Marvin Harris. (Sponsel 2007). Harris used the idea of cultural materialism as a research strategy to reveal and explain the ecological rationale underlying various aspects of culture. In his view, the cultural system can be divided into three components: 1) infrastructure, resulting from the interactions among environment, population, and technology; 2) structure, as the outcome of local domestic and wider political economy; and 3) superstructure, the ideational realm encompassing religion, myth, and the arts. (Sponsel 2007). The contemporary environmental anthropology, exemplified in the works of Peter Brosius and Susan Stonich, among others, combines a range of sources: poststructuralist social and cultural theory, political economy, globalization theory, among others. Therefore the present environmental anthropology has established stronger links to the study of power and inequality, regimes of knowledge production and to the importance of the globalization process. (Brosius 1999, 278).

At the moment, a rising trend is precisely the study of climate change, the loss of biodiversity and its effects on cultural systems, and environmental justice, often linked with questions of indigenous communities' rights. However, there are still relatively few studies of what is happening in particular places, and within specific organizations, to the relations of power among individuals, communities, and the state. Thus, the discourse within which the impact of NGO practices are presented as the solution to problems of welfare, development and democratization, especially tied to environmental affairs, is a terrain yet to be discovered further by scholars. (Fisher 1997, 441).

What first aroused my interest in the discourse on climate change was the emergence of a discussion in the international media about potential future hoards of climate refugees. (Eg. Helsingin Sanomat 30.11.2009; BBC News 18.11.2009; CNN News 10.06.2009). It seems that once the social side of climate change has been taken up for analysis, the first expected impact is large-scale migration, making climate change also a "geopolitical hazard". On the whole, I had paid little attention to discussion about climate change until these images and estimates started popping up constantly in the media. Thus, I decided to search for answers to a question posed by Beck in the mid-nineties: "What does the threat of self-annihilation mean to society, its institutions, its understanding of progress and of itself; to the legal, scientific and economic system; to politics and cultures?" (Beck 1995, 180). He also brings up an interesting idea defending the anthropological necessity of studying risks in contemporary world, arguing that the new threats from civilization lead to the emergence of a kind of new 'shadow kingdom', comparable to the realm of the gods and demons in earlier times, hidden behind the visible world: "The role of the spirits would be taken over by invisible but omnipresent pollutants and toxins." (Beck 1992, 72-73).

1.1 Research question

This study focuses on three main issues that exemplify the problem of structural violence in the hinterlands of Northeast Brazil: land use, the drought industry and the social and power relations that lie behind these, including the past and present actions of government institutions and the agribusiness sector. Further on attention is drawn to forms of resistance by the civil society by means of green consciousness and through the search for alternative solutions, such as agro-ecological farming, to environmental dilemmas. I also argue that focusing on power relations and the social structure alone is insufficient, as the symbolic realm of values, portrayed through popular culture and imagery plays an essential role in defining and maintaining these structures. The topic of structural violence in the hinterlands of Northeast Brazil could have been approached from a number of different perspectives, such as gender relations, race and ethnic questions, or even an intergenerational approach. However, within the scope of this study it is impossible to focus on everything, which is why I have decided to leave these perspectives to the background. My choice of topics arose as the result of the first

encounters with informants, many of whom repeatedly brought up these very themes when discussing the question of climate change. As mentioned earlier, what initially sparked my interest in the topic was the media coverage of potential future 'climate refugees', and my initial hypothesis was that in Northeast Brazil, the general tendency would also be that of migration resulting from challenges posed to subsistence farming and other land-related livelihoods by a changing environment. As often happens in the field, I had to redefine and question my initial hypothesis, as my first observations and discussions with informants led not to talk about migrants in search of a better life in the cities, but to farming techniques, environmental activism and the question of land rights.

I chose Northeast Brazil as my fieldwork site for a number of reasons. First, it was often portrayed in the media as one of the first areas of the globe to suffer from the impacts of climate change. Second, the semiarid region of Northeast Brazil has not only suffered from extreme climatic phenomena, such as droughts, throughout history, but has also developed a unique culture that has the *sertanejos*'[1] relation to land and nature as a central theme. The third reason for choosing Brazil as the fieldwork site for this study is that the Brazilian society is by many described as one that has a tradition of inequality and structural violence. Particularly the problems of drought, misery and hunger have historically been seen as the best example of the survival of a pre-capitalist, feudal social structure impeding real development in the region. (Soares, 2008).

1.2 Why droughts? The relevance of studying environmental phenomena from an anthropological perspective

I decided to focus on the problem of droughts in the *sertão* because the notion of drought, or *a seca* as it is traditionally known, has long historical roots and cultural understandings related to it in the region. The very identity of a *sertanejo*, or inhabitant of the *sertão*, is intertwined with the concept of *a seca*. Historically, the underdevelopment, periodic famines and misery of the region have all been contributed to droughts. What also got me interested in studying specifically droughts is the

[1] The semiarid hinterlands of Northeast Brazil are locally known as the *sertão*, which I will be using to designate the region from now on. An inhabitant of this region is referred to as the *sertanejo*.

recurring affirmation in literature concerning the region that there droughts are essentially a social, not a climatological problem. I was curious to see whether the discourse on climate change has altered the underlying social structures present in the region, age-old understandings related to droughts, and what coping strategies the locals have devised for present and future changes in the natural environment around them. Through different media, the general discussion on climate change has also reached the hinterlands of Northeast Brazil. As an area historically seen as inhospitable and as a very vulnerable environment, climate change could further alter the living conditions of millions of people and change the landscape drastically in the next 50 to 100 years. As mentioned above, I also wanted to see whether the predicted social consequences of climate change, mainly that of massive migrations, are in fact a reality or not in the hinterlands of Northeast Brazil.

Yet another reason for choosing to focus on droughts is the parallels I find it to have with the phenomenon of structural violence. Arons notes:

> Drought is like a slow-motion war, except no one turns on CNN every fifteen minutes to check out the latest turn of events, charts, statistics, or what the talking head has to say. It is the forgotten natural disaster, the one no one wants to watch. And as with the unnatural disaster that is war, political issues invariably lie behind the madness. (Arons 2004, 22).

Thus, just as structural violence is a forgotten form of violence due to its invisibleness and duration, droughts are "the forgotten natural disaster". They are different from other natural hazards in that they accumulate over time, linger for years and rarely create structural damage as a hurricane or earthquake might.

Droughts are defined not only by their duration, but also by their geographical extent, and frequency. The areas most acutely affected by droughts are the semiarid regions of the globe, which account for 13 to 16 percent of the earth and are home to approximately 10 percent of the world´s population. Recent studies of droughts have shown that a number of both social and environmental factors influence the impact of climate on society. Poverty, landlessness, inappropriate technologies, the poor quality of soils, and political weakness make some population groups more vulnerable to drought than others. (Liverman 1990, 49). Of the globe's arid and semi-arid regions, the most economically deprived and the most populated one is the semiarid region of northeast Brazil, the *sertão*. There is considerable variation in the severity and suddenness of droughts depending on regional specificities, such as the availability of water sources,

water use, the level of water utilization, the quality of water and how institutions deal with the shortages. These factors once again highlight the social dimension of droughts.

1.3 Fieldwork and methodology

I would fatigue my hosts with foolish questions and refuse to understand their answers. There was the danger that I would repeat things I had heard and seen. I was a constant source of social embarrassment. (Barley 1983,56).

The fieldwork for this study was conducted over a period of three months, from August 2010 to November 2010 in the states of Pernambuco and Paraíba in Northeast Brazil.[2] The fieldwork was divided between two regions: the city of Recife, the capital city of the state of Pernambuco located on the coast, and the interior semiarid regions of the states of Pernambuco and Paraíba. Recife has a population of slightly over 4 million inhabitants, and is the fourth biggest metropolitan area in the country. It is the most important commercial and industrial centre in the Northeast, and has historically been also a major pole of migration from the interior and surrounding states. During my three month stay I lived in Recife, mainly because logistically it was easiest to get around from there to different locations, and also because most of the NGOs, government agencies and universities were stationed there. I also found early on that many of my potential informants, although currently living in Recife, were originally from the *sertão*.

Methodologically, my fieldwork consisted of interviews, participant observation, and attending two seminars, one organized by the NGO Caritas on climate change, and one organized by the Federal University of Pernambuco (UFPE) on agro-ecological farming, including a two day workshop on an agro-ecological family farm near Recife. I conducted a total of 22 interviews, out of which 6 were group interviews and 16 individual ones. The interviews were semi-structured, 8 of them also involving a free listing exercise where the informants had to list the first words they related with the concept of 'climate change' in the region. All of the interviews were conducted in

[2] The states will from now on be referred to by their abbreviations in reference to interviews and field notes; PE for Pernambuco and PB for Paraíba respectively.

Brazilian Portuguese, and have been freely translated by me into English. In addition to the interviews, observation and seminars, I used a number of policy briefs issued by the government, material published by the NGOs, and collected *cordel* -poetry[3], excerpts of which are used to highlight the popular culture aspect of the issues I study throughout this work. I have left the original Brazilian Portuguese versions of these poems beside the English translations, as they are also my own free translations. Most of the data was collected in Recife, complemented by shorter trips to the *sertão* through the NGO Caritas to locations in the states of Pernambuco and Paraíba, where they were involved in social projects. My informants could be roughly divided into 4 groups: academic experts studying environmental and social issues, mainly from the Federal University of Pernambuco; trained workers for organizations working on the field or in government agencies in Recife; local farmers and beneficiaries of the projects I visited; and mainly lower-class workers in Recife, who had mostly migrated from the *sertão* to the capital, and whose families were still living there. The gender division of the informants was 44% women, 56% men, their ages ranging from 19 to around 70 years.

My first contact in Recife after arriving was with the Federal University, where I conducted the first expert interviews. My aim was not to get the largest number of interviews possible, but to compare expert views to those of the 'common man', mainly to see how much these differ, and how much scientific knowledge has influenced local lay opinions of climate change. This point will be elaborated later on in the study. These initial contacts with the University lead to further interviews with people working in government agencies in Recife, such as SECTMA, the Secretariat of Technological Sciences and Environment, SRH, the Secretariat of Hydraulic Resources and Energy, and FIOCRUZ, a research centre working in co-operation with the Ministry of Health. These meetings in turn lead to contacts with the NGO Caritas, ASA (The Half-Barren Articulation), an umbrella organization working with drought-related problems in the semiarid regions, and a number of church-affiliated NGOs such as CPT (the Pastoral Land Commission) and CIMI (the Indigenous Missionary Council). And finally, through the field projects of the above mentioned organizations, I got to meet the farmers and peasantry in the *sertão*.

[3] A traditional form of poetry printed on small leaflets and recited usually by the author accompanied by music played by a band.

Participant observation was at times challenging due to the intangible nature of my study. I attended activities organized by the local Greenpeace activist group in Recife, where I got to witness and participate in awareness building about climate change in the urban setting; in the agro-ecological workshop organized by the UFPE, I took part in planting a plot in an agro-ecological farm; and in the *sertão*, as we went around the gardens of my informants, I got to feel, taste and smell what organic farming is all about. In addition to these hands-on experiences, I tried to engage in conversations about climate change with almost anyone and everyone I met, to see if differing lines of enquiry would rise up. Questioning into people's opinions about the way of life in the hinterlands in the middle of a merry beach party, or interrupting a delicious meal with small farmers to ask whether the tomatoes were home-grown or not probably *did* make me a "source of social embarrassment" at times, as Barley would put it. This approach, however, seemed to pay off in the end, as the informants I spent most time with got very accustomed to seeing me everywhere with my tape-recorder, notepad and pen, and after teasing me slightly about having no life of my own, shrugged it off benevolently.

Regarding ethical questions, and more specifically the question of objectivity and my own position in the field, some observations must be made. Due to the fact that most of the farmer and peasant informants in the *sertão* were beneficiaries of, or otherwise within the scope of action of the various development projects I visited, the responses I got from them to specific questions may have been to some degree aligned with the official views of the NGOs. Also the fact that I visited these projects with representatives of the NGOs may have influenced the way they see me, not as an independent investigator but as an NGO worker as well. However, in general terms I found that the responses given to me about politicized themes, such as the San Francisco River transposition or the drought industry, did not differ significantly between those who were involved in the projects and those who were not. The most notable difference in responses given about the effectiveness of the NGOs' projects between those who were beneficiaries and those who were not, was the higher amount of praise given by beneficiaries to these undertakings. In general, however, even among those not directly participating, the feedback on these projects was positive. This having been said, I did explain to all the informants that I was working independently for this study. However, regarding environmental, and at times political issues as well, I did not try to hide my own opinions on the subject, but rather took them as points of discussion

and debate with the informants. Agreeing fully with Nancy Scheper-Hughes, I quote her in explaining how I felt on the field:

> I am inclined toward a compromise that calls for the practice of a "good enough" ethnography. The anthropologist is an instrument of cultural translation that is necessarily flawed and biased. We cannot rid ourselves of the cultural self we bring with us into the field any more than we can disown the eyes, ears and skin through which we take in our intuitive perceptions about the new and strange world we have entered. (Scheper-Hughes 1992, 28).

I also have to remark on the enthusiasm and willingness of the informants to share their views with me, quite openly discussing themes that could also be considered somewhat sensitive subjects. I was taken in very well and offered help by both experts and laymen alike everywhere I went. Being Finnish also seemed to be an asset when discussing climate, as people were intrigued by the 'cold and dark' country where I came from, and wanted to find out how climate change was affecting life here. I was also constantly being told to watch out for the sun because of my fair skin, and people kept asking me how much I suffered due to the heat. In the countryside, my informants were also worried about my health, as my country imports fruit which is not organically or agro-ecologically grown, and contains toxins, warning me that eventually this will make me sick. The people I talked with were also very curious to know if the government in Finland was doing something to combat climate change, or if it was only 'activists' that were worried about the matter. The subject of climate change related to social issues seemed to inspire a lot of discussion, and many of my informants stressed the importance of doing studies about the matter that are not only based on the abstract pieces of information given by the media. However, to protect the identity and anonymity of the people who contributed to this study, all the names have been changed, although I have in most cases mentioned certain background facts, such as where a certain person works, if it has relevance to the information they give.

1.4 Synopsis of chapters

Following the introduction, I present the background and field data for this study through two main subchapters: one regarding the social and physical milieu, historical development and structural problems in Northeast Brazil, and another one dealing with the discussion on climate change and its projected and already perceivable impacts in the region in question. The first subchapter, mainly focusing on the history of the

region, is rather extensive due to the fact that in most encounters with the informants, they stressed the importance of history in understanding the present. The relation of people with the land, the old political and cultural structures at the root of present institutions, would remain inconceivable to the reader if they knew nothing about the region's historical development. As Mintz points out, "social phenomena are by their nature historical which is to say that the relationships among events in one "moment" can never be abstracted from their past and future setting" (Mintz 1986, xxx).
The climate and vegetation of the region are also discussed quite extensively to give an idea of what the region is physically like, as this was also emphasized to me through different comments, such as "you will see for yourself when you get to the *sertão*", or "look at the roadside when you travel there, see how the vegetation changes?" The descriptions, I hope, help to shed light on why the environment has traditionally been seen as so hostile in the *sertão*, and what kind of a relation the people have formed with these surroundings. The subchapter dealing with climate change contains rather technical, scientific information, which I actually find important to present as it is this techno-scientific knowledge that works as the foundation of local layman impressions of climate change, as will be seen later on. The contextualized education, through which local peasants form their view of climate change, derives precisely, in a filtered form of course, from this very technical information.

The third chapter introduces the main theoretical arguments relevant to the study, through which climate change and social problems and the ways of dealing with these are analyzed in chapter 4. There is also a continuum between the theoretical arguments. I intend to show that although structural violence exists in various forms in the region, in the postmodern era of global hazards and invisible risks, old structures are renegotiated constantly as new actors such as NGOs and multinational firms take step into the picture, and I finally argue that the discourse on climate change has actually opened up a niche for the civil society to question old structures that have been in place for centuries. In the analytical chapters also the realms of values and moral are drawn into the discussion, as these questions were also continually either brought up by the informants, or implicitly present in my observations. Finally, in the conclusion I will attempt to draw the strings together, and show how climate change and social and cultural questions can have interesting links with issues of poverty and questions of power.

2 THE FIELD: BACKGROUND AND DATA

2.1 Northeast Brazil: A brief introduction

An excursion into the Brazilian interior is equivalent, in a certain sense, to a visit to the past. (Nunes Leal 2009, 16).

Northeast Brazil, locally known as *O Nordeste,* covers 1 548 000 square kilometers, and is comprised of a total of nine states, these being Ceará, Pernambuco, Paraíba, Sergipe, Bahia, Rio Grande do Norte, Alagoas, Piauí, and Maranhão. The region is divided into three geographic zones: the coast (*litoral)*, the "forest zone", (*zona da mata)*, and the dry, semiarid hinterlands known as the *sertão*[4]. Many of the capital cities of the Northeast are situated on the coastal strip, and it is a region teeming with industry, beaches, and tourism. The *zona da mata* is the first zone towards the interior from the coast, and is characterized by hot and humid climate, vast sugar cane plantations, and fertile soil. The hinterlands or *sertão,* is the semiarid, drought-prone, hot, and dry region that covers nearly 90 percent of the Northeast. Between the *zona da mata* and the *sertão* is a transitional zone known as the *zona do agreste,* which is a combination of the other two zones and is considered the gateway to the *sertão.* Climatically the year is divided into two seasons, the rainy season and the dry season, in the entire area comprising the Northeast. However, there is much regional variation in the temporal division of these seasons.

Northeast Brazil is home to 45 million people, almost one third of Brazil´s population. It is also one of the poorest regions of the country, with a legacy of slavery, social inequality, and a persistent problem of the unequal division of income. The traditional economic and agricultural model has been that of the *fazenda*[5], large estates producing mainly sugar cane and cotton, and in the *sertão* extensive rearing of livestock. One of the factors that makes the *sertão* unique compared to other arid or semi-arid regions in the world is its high population number. Approximately 22 million people live in the

[4] See appendix 2.

[5] 'plantation, estate'.

sertão, making it the most populous semi-arid region in the world. (Caritas 2002, 10). Ethnically the population in the Northeast derives mainly from Portuguese settlers, Indians and Afrobrazilians originally brought as slaves for sugar plantations. Ever since the 16th century, sugar has had a defining role in the history of the Northeast, shaping the settlement patterns, the rise of wealthy landowners, and social relations in the region. What is important to note also, is that the rise of the plantation economy, due to the demand of sugar during colonial times in Europe, afforded pioneering opportunities in the New World that laid the ground for power relations for centuries to come. (Mintz 1986, 169). As the sugar plantations were concentrated on the fertile strip on land along the coast, the *zona da mata*, most of the Afrobrazilian population remained there,initially as slaves, and later as manual workforce. However, a number of native Northeasteners of Portuguese descent, and *caboclos*, of mixed Indian and Portuguese blood, dedicated themselves to cattle rearing and ventured further and further inland following their cattle in search of new pastures. These are the original settlers of the *sertão*, and ethnically still define the region nowadays.

From the early days of the colonization, the Northeast has never been remarkable for its commitment to equality or social progress. When Brazil was first colonized by the Portuguese, the entire landscape was divided into fifteen *capitanias*[6], each put under the control of a Portuguese nobleman. According to Arons, most historians believe the Portuguese never intended to settle in Brazil, but their aim was simply to extract as much material wealth as possible given available human resources. As happened in many parts of Latin America, the indigenous population died from disease and abuse, and Portuguese settlers turned to African slavery, importing more slaves than any other nation in the hemisphere. (Arons 2004, 68). There are a number of well-known ethnographic and sociological accounts written about the Northeast, discussing both the historical roots of the region´s social structures and everyday life in the region. Among the most noteworthy are the works of Gilberto Freyre, Josué de Castro, and the extensive ethnographic account *Death Without Weeping: The Violence of Everyday Life in Brazil* (1992) by Mary Scheper-Hughes.

The classic works of Pernambucan anthropologist and sociologist Gilberto Freyre, including *The Mansions and the Shanties* (1963), *The Masters and the Slaves* (1956),

[6] Captaincy.

and *New World in the Tropics: the Culture of Modern Brazil* (1959), are among the most comprehensive and famous studies discussing the legacies of slavery, the formation and social consequences of the plantation economy, and ethnic questions in the region. For the purposes of this study, one of Freyre's most interesting ideas was the link between the institution of slavery and strong patriarchal familism: during the times of slavery, but especially after abolition, the male-dominated 'big house' became the power center, creating a basis for the supreme power of large landowners, later to be also known as *coroneis*[7]. Thus, not only gender-relations, but also the dependency-relations between different social classes trace their way back to age-old institutions such as slavery and the agricultural plantation model originally imported from feudal Europe. (Freyre 1966, 193-195). Regarding ethnic questions and race, Freyre has subsequently been criticized for his overly romantic concept of 'racial democracy' in Brazil. His argument was that miscegenation produced in Brazil a situation where racism was practically inexistent, and had little effect on social standing – an idea that has mostly been refuted by other students of Brazil. The question of race in Brazil, just as the question of gender, is a rather complicated one, and although it most certainly is related to the topic of structural violence, I have decided not to focus in-depth on these questions in this study due to lack of space.

The power relations that to this very day persist in the region in a modified form were for the most part formed early on in the heyday of sugar plantations. In the imperial times, the Portuguese Crown handed over land to mainly aristocrats of Portuguese descent, forming the basis for a white landed gentry. Little changed when the Empire became Republic, except that less thought was given to the ancestry of arriving Portuguese settlers, and land was given out more freely, especially in the *sertão.* The role of those of Indian or mixed ancestry mainly became that of peasants working on someone else´s land, and living off subsistence farming. As mentioned, the Afrobrazilian population in the *sertão* was and remains relatively small in number, mainly composed of former runaway slaves who formed communities known as *quilombos,* also supporting themselves on subsistence farming. (Vilaça & Cavalcanti de Albuquerque 1987, 6-9). The "elite", the landed gentry, formed in parallel ways in the coast and in the interior hinterlands, although there were notable differences in their

[7] Colonels.

lifestyles: whereas the sugar lords enjoyed displaying their wealth, living in an ostentatiously grand manner and mingling in the salons of the big cities, the hinterland lords lead a life of the farm, investing largely in land, having a low formal education, and keeping their finances under strict control. During the days of the Old Republic (1891-1930), the ranks of landed gentry in the *sertão* swelled further by the appearance of colonels; those of Portuguese descent but financially less fortunate and less endowed with social and political prestige than the old elite, who joined the National Guard and thus earned the rank of *coronel*, later to be equated with land-owner, vote-owner, patriarch and strongman of the *sertão*. They became the community leaders: "They were farmer-landowners, political leaders, social arbitrators, with their herds, their assassins (their militia), their electoral power. Later they became rulers of local commercial and industrial activities. They were masters, absolute sovereigns, unchallengeable." (Vilaça & Cavalcanti de Albuquerque 1987, 8). The phenomenon known as *coronelismo*[8] thus took root. *Coronelismo* could be defined as a system of patronage, a notorious union between public authority and the private power of local bosses. Its essence is a compromise between the two:

> On the part of the local bosses, unconditional support for official government candidates in state and federal elections; on the part of the state government, *carte blanche* for the local boss who supports the government (preferably the leader of the majority faction) in all matters relating to the municipality, including the nomination of state functionaries employed there. (Nunes Leal 2009, 20).

The links between these two powers can also be traced back to the agrarian structure in the country, where governments have almost always been drawn from the dominant landowner classes. The agrarian structure thus contributed for a long time to the survival of *coronelismo,* just as *coronelismo* helped preserve the agrarian structure intact. (Nunes Leal 2009, 141). The basis for the political power of the *coroneis* lies in this very union, also explaining why they were mostly in charge of providing and controlling basic services, such as water supply in the *sertão*. Although the institution of *coronelismo* is practically extinct nowadays, it is the sons of these colonels, the heirs to their political and economic influence, that still steer local politics to a great extent in the hinterlands of Northeast Brazil.

[8] Translates roughly to "colonelism", the power of the local strongmen known as 'colonels'.

2.1.1 Physical environment and challenges of living in the *sertão*

The *sertão,* or semi-arid region of Northeast Brazil, is a huge, diversified area covering roughly 868 000 km^2. The semi-arid region is defined by the deficiency and irregularity of rain, leading to periodic droughts. To clarify, the problem in the *sertão* is not lack of rain as such: precipitation rates are 750 mm on average, making the *sertão* one of the most humid semi-arid regions in the world. What makes the *sertão* vulnerable in the event of drought, in a climatic sense, is both the high evaporation resulting from high temperatures and the shallowness of the soil, which has a very low capacity for water retention, and the irregularity of rains. The evaporation rate in the region is three times higher than the precipitation rate. The soil is mainly composed of crystalline rock, which also results in the salinization of the soil. The irregularity of rains means that there is great variation in both the temporal and regional occurrence of the rains: the rainy period lasts usually more or less 4 months, and can occur any time between September and March, but there are no guarantees on when and where precipitation will occur. The main challenge in the area is therefore the storage of rainwater during the rainy season in preparation for the periodic droughts. (Caritas *et al* 2001, 13).

The vegetation in the *sertão* is mainly composed of what is called the *caatinga*, indigenous word meaning “white forest”. During the rainy season it is green and lush, fostering one of Brazil´s greatest biodiversities in various insects and plants. During the dry season, the *caatinga* goes through something comparable to hibernation, acquiring a dry aspect and thus earning its nickname of “white forest”. Once the rains return, there is a quick resurrection of the vegetation, and what looked dead and barren blossoms again in a matter of days. Thus, in the *sertão* the difference between the two seasons tends to be more extreme than in the rest of the Northeast. My fieldwork in the region was timed right in the beginning of the dry season, so the landscape was not yet quite as extreme as at the peak of it. Yet, driving from the coast inland towards the city of Pesqueira in Pernambuco, that is considered the gateway to the *sertão,* the changes in scenery on this approximately three hour journey were already very notable. From the lush sugarcane fields to slightly more arid, cattle-filled pastures to dried-up bushes along the roadside, I was constantly prodded by the driver to note the increasing desert-like conditions as we approached the *sertão.* Two things were always commented on by the informants I discussed the climate with: the dryness, and the heat. Even before

going to the *sertão*, I had repeatedly been warned about cities such as Patos and Cajazeiras in the state of Paraíba as being "like ovens, hot hot hot, and puf, so dry, so dry nothing lives!" (Interview Recife, PE, 11.09.2010).

2.1.2 *Vidas Secas*: The image of drought and misery

Tudo sofre e não resiste	*Everyone suffers and fails to resist*
este fardo tão pesado,	*this burden so heavy*
no Nordeste flagelado	*in the afflicted Northeast*
em tudo a tristeza existe.	*sorrow exists in everything.*
Mas a tristeza mais triste	*But the greatest sorrow*
que faz tudo entristecer,	*Which makes everything so sad*
é a mãe chorosa, a gemer,	*Is the weeping mother, moaning*
lágrimas dos olhos correndo,	*Tears running from her eyes,*
vendo seu filho dizendo:	*hearing her son say:*
mamãe, eu quero morrer!	*mother, I want to die!*

- Patativa do Assaré: "ABC do nordeste flagelado".

The hinterlands of Northeast Brazil is a region often described in terms of persistent poverty and resistance to change, both related to the image of drought. According to Greenfield, drought is seen by Northeasteners as both a cause and symbol of their region´s relative underdevelopment, and they claim that this reflects a long-standing pattern of government favoritism toward the South. (Greenfield in Levine *et al* 1999, 100). The image of drought, *a seca*, has long been invoked to explain everything from the character and identity of *sertanejos* to the melancholy music, to folk Catholicism, to patron-client dependencies, to messianic movements, to the periodic famines and the suffering known as *miseria da seca*, "the misery of the drought" (Arons 2004, xiv). The image of droughts is formidable, and inextricably tied with the image of the *sertão*. Practically every description and ethnography that I read about the region before going to the field echoed this image: the hinterlands of Northeast Brazil are home to a melancholy, resigned and fatalistic, but tough and humble people who lead their simple lives on the terms of the periodic droughts, and have built a unique cultural sphere around them. This is the cultural politics and poetics present in the region, repeated in

poetry, songs, literature, *cordeis*[9], art and studies of the region. For example, Nancy Scheper Hughes describes the horror of drought and thirst as the "one raw and vital nerve among *Nordestinos,* rich and poor alike". The image captures the imagination of people who describe all that is bad and negative in terms of dryness, sometimes even projecting the image of drought into their own bodies. Hence someone may for example describe their body as worn-out, dried up. According to her, "water anxiety is general in the population, although it is the poor whose health is most compromised by the scarcity and poor quality of the public water supply." (Scheper-Hughes 1992, 68-69).

Despite the fact that droughts have long stalked the Brazilian Northeast, with numerous recorded instances of drought dating as far back as the 1500s, the contemporary image of the drought dates mainly back to the mid-nineteenth century. Cattle ranches and sugar plantations stood as the area's dominant representation, and drought remained simply an unfortunate fact of nature, or a punishment from God, that affected various parts of the nation's vast interior. The Great Drought of 1877-1880, which is still recalled as the worst such occurrence in the region's history, played a critical role in this process of definition. It created a framework for interpreting all subsequent droughts. Thus, the regional identity of the *sertão*, is a social construct, a product of human imagination whose origins lie in the latter portion of the nineteenth century. (Greenfield in Levine *et al* 1999, 101). From this period onwards, the image of the misery of drought also began to capture that of mass migration from the interior of the afflicted states to the coastal areas, and even as far south as São Paulo and Rio de Janeiro. The Great Drought crippled the *sertão,* resulting in a stream of backlands masses headed for other areas in search of food and water. These drought refugees, generally called *retirantes* but also known as *flagelados,* 'the afflicted', were quickly incorporated to the imagery of the misery of drought: the *sertanejo* with his family at the mercy of an ever-hostile environment, carrying his few belongings on donkey back in search of a better life[10]. After the Great Drought of 1877, the imperial government also stimulated migration from the region to other, more 'livable' regions, such as the South and Amazonia, that was also in desperate need of cheap workforce. (Correia de Andrade 1987, 92).

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[9] Singular *cordel,* plural *cordeis.*

[10] See Appendix 4.

When asked what characterizes a *sertanejo* these days, several of my informants stressed the unique relation they have to land. However, what is interesting to note is that when asked if there is rural-to urban or interregional migration among the *sertanejos,* all my informants maintained that the era of the *flagelados* is in the past. Everyone stressed that the trend to migrate has diminished significantly. Maria describes what the modern *sertanejo* is like as follows:

> It is extremely strong, the love of the land that the *sertanejo* has. It is his place, it is so strong, for them the relation is much stronger than for us. It is also a unique relation that they have with the land: if he can stay there, he will. He [*the sertanejo*] will only leave if he has absolutely no other alternative. It is also a form of resistance. (Interview Recife, PE, 21.9.2010).

Rafael from Pedra also points to a change in migration patterns:

> There is still migration, but it is for different reasons. The younger generations do not want to stay in the countryside, it is not because of the droughts but because they want to study and work in the cities… thanks to the cisterns, we old folk can remain at the family farm, while the young ones go… (Interview Pedra, PE, 07.10.2010).

Seu Roberto, a retired government official from the interior city of Cajazeiras, Paraíba, has a somewhat differing view of what the sertanejo is like these days.

> The Northeastern culture is suffering from a loss of values nowadays. [...] What used to characterize the Northeastern man was the force of his work and ethical and moral values. Unfortunately that has been lost. Thus, he has ceased to be robust, strong, and ethical and has become the sum of the model that has been applied on him. [...] This started with Sarney's government, in 1986. All of the degradation of the Northeastern man started in 1986, resulting from Sarney's policies. [...] It is the neoliberal model that led to the corruption of the leading political class. (Interview Cajazeiras, PB, 12.10.2010).

The above quotes reflect the general division of opinions that my informants had on the *sertanejos*: more or less half of those interviewed stressed the unique and affectionate tie that the inhabitants of the region have with the land, and often mentioned it to be something that a city-dweller can neither grasp nor feel. The other half however highlighted the change in morale and attitude towards the land, claiming that there has been a moral devaluation in the relationship that the *sertanejo* has with his natural surroundings.

The image of the *sertanejos'* relation to their environment is echoed also in local poetry, art, music and literature. The citation at the beginning of this chapter is an example of the traditional poetry of the *sertão*, called *cordel* ("poetry on a string"). *Cordel* is a form

of poetry that falls into stanzas of usually six or seven lines, is sold printed on pamphlets of eight, sixteen or thirty-two pages, and is normally performed in the form of song by its author. Customarily, *cordel* poetry is sold in market stands alongside food, cotton and leather products, and more often than not it is the *cordelista*[11] himself who sells his pamphlets, improvising new lines constantly to attract the interest of the customers. Often, especially in olden times, *cordelistas* roamed the hinterlands accompanied by a band performing their poems. Historically, due to high illiteracy rates in the *sertão*, and in the absence of television and newspapers, many people used to rely on these *repentistas* or *violeiros*[12] to bring news of the outside world to the hinterlands. (Arons 2004, 41). Nowadays the *cordelistas* often focus on describing the traditional way of life in the *sertão*, but I did come across *cordeis* taking a stand on global warming, neoliberalism, terrorism and many other contemporary issues as well. This shows that although less prominent nowadays, the art form is very adaptive and definitely not extinct.

Among a number of fiction and non-fiction literature depicting life on the *sertão*, certain classic works stand out. One of these is Josué de Castro´s *Documentario do Nordeste* (1959), depicting life in the *sertão* of the 1930s and 1940s through short stories and sociological analysis. The popular imagery of life in the *sertão* is well summed up in his short story called *The Drought*:

> The drought killed everything. It dried up all the water and all the life from the region. Juvêncio, facing this desolate spectacle, feels the last drop of hope dry up inside him as well. […] On the hard and rocky road, the soles of his sandals hit the ground like a rattle, and tragic thoughts start to rattle his paining head too: When will this terrible drought end? Which will face its end first: the drought or his family? What is better: to die of hunger and thirst on his own land, or to emigrate and die of fatigue and shame in the land of others? (De Castro 1959, 51-52).

In another notable classic novel, *Os sertões*, Euclides da Cunha links the formation of the character of the *sertanejo* to his natural surroundings, arguing that the extremes of the environment are also reflected in the regional character of the population. Just as nature in the *sertão* withers away with the drought only to revive again during the rains, so does the *sertanejo* become resigned to his struggle during the drought only to thrive

[11] Cordel-poet.

[12] Both terms refer to singing bards.

again when the rains return. He is tough, humbled by his surroundings, and physically as parched as the land around him. (Da Cunha 1905, 90-93). “He goes through life from one trap to another, repeated surprises of an incomprehensible nature, and appreciates every minute of ceasefire accorded to him” (Da Cunha 1905, 94). In this battle of land against man, the *sertanejo* finds his only comfort in religious faith (Da Cunha 1905, 105).

One of the most famous depictions in music that captures the popular imagery in the *sertão* is the classic song *Asa Branca*, (White Wing), by Luiz Gonzaga, translated into English by Raul Seixas:

> *When i stare the ground of /My land/Burning loose as dancing flames/I asked man there upon/The heavens/If i deserve me this kind of pain/I asked the man there upon/The heavens/If i deserve me this kind of pain/Everywhere the ground is so dry/There's no trees, no green, just red/I lost my cattle, my appaloosa/For lack of water some took away/I lost my cattle, my appaloosa/For lack of water some took away/Even white winged birds flew away/Flew away from my land sight/It was when i said goodbye/Sweet Rosie/Keep in to your heart, this heart/Of mine/It was when i said goodbye/Sweet Rosie/Keep in to your heart, this heart/Of mine/Many thousands miles away, now/Feeling lonely, lost and blue/I keep on waiting rain falls again there/So i'll be back thou home again/I keep on waiting rain falls again there/So i'll be back thou home again/When the glow green of your eyes/Flows again all over land/I can assure you, so don't/You cry, no/'cause i'll be back, see/To you again!!/I can assure you, so don't/You cry, no/'cause i'll be back, see/To you again!*

The song echoes the same recurring themes as the regional literature and *cordeis*: the misery of the drought, resignation and leaving destiny in the hands of God, death, and migration from the homeland.

Although repeating the traditional imagery of the *sertão* in his fiction, in his sociological analysis, however, Josué de Castro argues that the misery and poverty in the *sertão* cannot and should not be attributed to droughts, but rather to the social order. He blames the progressive proletarization of the *sertanejos* and the minimum means of production they have for the calamitous situation that is only made worse in times of drought. (De Castro 1959, 100). He further argues that the efforts of the Federal Inspectorate of Anti-Drought Works, later to be known as SUDENE, are exaggeratedly limited to the simple fight against droughts through accumulating water through the construction of dams, not focusing on the social and human aspects of the problem. In his view, what should be the main focus of government institutions would be the granting of opportunities for increased production through better land distribution and

increased democratization in the region. (De Castro 1959, 105). These ideas were considered rather revolutionary at the time, when many argued that the solution to the periodical misery in the *sertão* could best be solved through large-scale infrastructural undertakings or the exportation of the population to less hostile regions, such as the Amazon basin. As has become apparent later, this approach was not very successful: one of the social results of dealing with droughts in this manner was the formation of concentrations of misery and poverty, as small rural producers who migrated from the countryside to cities brought with them the problem of unemployment and homelessness. (Arons 2004, 173).

2.1.3 The drought industry

"*O problema não é a seca, é a cerca"* (the problem is not the drought, it is the fence) (Arons 2004, 3).

A persistent problem with deep historical roots in the *sertão* is what is known as 'the drought industry' *(industria da seca)*. During times of drought general access to water resources diminishes, leading peasants and farmers to depend on water supplied traditionally by the regional elite, and local 'politicos'. According to José, a researcher on desertification at the Federal University of Pernambuco, droughts provide the elite with an opportunity to obtain federal resources with subsidized interest rates, and to organize communal labor forces for the benefit of their own farms. Although government policy has throughout the years attempted to alleviate the suffering of the population during times of drought, in practice these attempts, from the distribution of food staples and water to the organization of communal work groups intended to provide food security, have been controlled by the regional elites who use the situation to increase their wealth and political control over the population. (Interview Recife, PE, 23.8.2010). As in the case of the image of the misery of drought, the drought industry in its contemporary form has its origins in the Great Drought of 1877. During the Great Drought, the national government expanded enormous sums of money on drought relief, much of it ostensibly earmarked to provide work relief for the displaced backlanders. Senators and deputies gave eloquent speeches about the suffering of these displaced *sertanejos*, and dictated that both conscience and the nation's Constitution mandated a compassionate public response. However, they also pointed to the superiority of work

relief as opposed to government handouts, and soon issued a relief effort rife with corruption, fraud, and inefficiencies. The result was the emergence of "the lazy *sertanejo* and profiteering *político*[13]" as key elements in the problem of drought. (Greenfield in Levine *et al* 1999, 101).

The drought industry has its roots in the power structures originating already from the times of the colonization of Brazil, and is deeply tied to the problem of unequal land distribution and to the relationship of landowners with the peasantry and the landless poor. According to Greenfield, the terms 'drought industry' and 'drought industrialists' capture a widely held belief that Northeastern politicians and elites have shamelessly taken advantage of droughts to provide patronage for their cronies, benefiting handsomely of the misery of the backlands' masses. Thus, the term *drought* does not merely describe a climatological phenomenon, but rather, serves as a powerful metaphor summarizing a complex of features popularly associated with the Northeast. The image of drought comprises such characteristics as impoverished, ignorant backlanders prone to religious mysticism and fanaticism, and greedy local bosses who readily employ violence to achieve their corrupt ends. (Greenfield in Levine *et al* 1999, 100). As Arons argues, the issue of drought cannot be confined to meteorological specialists alone due to the fact that the primary factor causing starvation, death, and rural-to-urban migration in the Northeastern interior is not a lack of water, but the political manipulation of that lack.

> The overriding problem in Northeast Brazil is that water is used as a weapon of power and prestige in a war against the poor. The droughts that strike the Northeast can be thought of not as natural disasters, but as weather fluctuations. Only when they are coupled with man-made phenomena – such as fences and barricades – do the droughts cause widespread devastation and death. (Arons 2004, 5).

In practice, during times of drought water is supplied by what are known as *carros pipa*[14], trucks equipped with freshwater tanks, providing water to communities that lack ways of storing water during the rainy season. The traditional image of the drought industry is therefore the exchange of water supplied by *carros pipa* for votes in regional elections, and other political favors. However, several of my informants associated the drought industry nowadays also with large-scale infrastructure projects such as the San

[13] Politician.

[14] see Appendix 3.

Francisco River transposition, and the undertakings of the former state agency known as SUDENE. (Interviews 23.08.2010; 20.09.2010; 21.09.2010 Recife, PE; Interviews 11.10.2010; 12.10.2010 Cajazeiras, PB). In general terms then, I would define the drought industry as an institution based on the exchange of water for political dependence.

What I found interesting, however, was that based on the interviews I conducted there was quite a bit of disagreement on whether the drought industry is still an acute problem and a widespread phenomenon, or whether it is 'a thing of the past'. Driving through the hinterlands, I spotted a number of *carros pipa* that were, according to my informants, still carrying out the same task. In a group interview conducted in the community of Ventanía, PE, the respondents stated the following regarding the drought industry:

> Apolónio: "But here, in these surroundings, for example I know regions here close-by that rely entirely on the water trucks. And there the so-called industry does not cease to exist. A lot of people depend on it. "
>
> Sebastião: "The water truck business also depends a lot on... um... the duration of the drought, for example, if we talk about only one dry year, the family might survive on their own cistern-stored water. But if we talk about more than a year, the structure in place, the cistern, is not enough. So practically all families are vulnerable and may at some time be in need of communal cisterns, even if they have ones of their own. So the army, right, coordinates a program of distribution, so, the water trucks distribute water to the communal cisterns, and families use them for other needs in the house, not for drinking, but for washing, giving to the animals, etc. So a lot depends on the year in question and on the rains." (Interview Cacimbas, PE, 14.10.2010).

Felipe, a young man originally from the interior town of Petrolina in the Pernambucan *sertão*, notes regarding the drought industry:

> I think it still is very much alive today. The politicians, they use… for example: the San Francisco River transposition, right? There are other solutions that would be much cheaper, but less visible and less large-scale, and that would just as well solve the problem. All this is a part of the drought industry; they win votes for redirecting a river from its natural course, by taking it somewhere else… For example, in [the state of] Piauí, they say that that is where most of the subterranean water in the *sertão* is concentrated. So they could dig wells, use that sort of easier solutions, and cheaper ones, but instead they do this…" When asked whom he thinks the transposition will benefit, he states: "I think, I think what is going to happen is as follows: the large estates will have water, and they will hire poor people to work there. This will not solve the problem for small farmers. You are taking him from his own land to work on someone's… on some rich guy's land, and that relation will define his entire life. I think that is what is going to happen. I think the small farmer will not have access, no. (Interview Recife, PE, 20.9.2010).

Isabel, a representative of Caritas Brazil agrees:

> It exists, still exists. Some families that are not beneficiaries of the cisterns still suffer a lot because of their dependency on the water trucks. We have built altogether almost 300 000 cisterns in the semiarid, but according to calculations we would need more than 1 200 000 cisterns in order to attend to all the families, so…Just think that we have achieved a number that is still… compared to the demand, small, right? (Interview Pesqueira, PE, 05.10.2010).

Silvana, an elderly lady whose family owns a farm in the municipality of Pesqueira, explains that in the old days, life was very hard, them having to search water far away and the water being very contaminated and leading to illnesses in both children and adults. She does claim, however, that this is all in the past now; with the arrival of the cisterns to collect rainwater, and rock tanks, they had, according to her, become largely independent of the drought industry, and that this was an institution largely extinct. (Interview Pesqueira, PE, 07.10.2010).

In order to sustain the drought industry, it is also necessary to sustain the 'drought myth' (*mito da seca*). This myth is the image of the *sertão* repeated in music, literature and art[15] not as a semi-arid, but as an arid, hostile region full of misery and always lacking in rain. This image, as discussed earlier, is profoundly distorted: even the state of Pernambuco, which has the lowest index of water per person per year in Brazil, does not qualify as an area suffering of "water stress" according to the UN. The limit for water stress is 1000 m^3/person/year; in Pernambuco the average index is 1270 m^3. (De Oliveira & da Motta Marques 2008, 13). This again indicates that the problem in the hinterlands of Northeast Brazil is not lack of water, but access to it, thus making droughts not a climatological, but a structural and social problem. Fighting against the drought myth was also a key point in the work of the ASA[16] and Caritas, whose social projects I visited in the *sertão*. The representatives of these organizations that I interviewed all stressed the importance of breaking away from this false image in order to find more constructive, grass-roots level solutions to the periodic lack of water. This need of changing popular conceptions about the *sertão* was also repeated by the small

[15] See appendix 4.

[16] The Half-Barren Articulation, an umbrella organization of NGOs and government bodies dealing with the environmental challenges of living in the semi-arid region.

farmers and locals involved in other social movements, as they found the image hazardous to initiatives for developing the region.

2.1.4 Land use and distribution

A causa de todo atraso	*The cause of all underdevelopment*
Desta imensa região	*Of this huge region*
É muita desigualdade	*Is the inequality*
E grande concentração	*And the huge concentration*
De terra, água e riqueza:	*Of land, water and riches:*
Os meios de produção	*The means of production*

- *José de Oliveira: "Convivência com o Semi-árido".*

As in many parts of Latin America, in Brazil during the time of colonization land was grabbed by force from indigenous communities, and handed out to what became regional elites as a royal concession, and later as an imperial donation. This practice led to a situation where landowners had exclusive right over the land, leaving the peasantry the role of resident workers on someone else's farm. Little changed with the Law of Lands Act of 1850, which transformed land rights from those given by the King to capitalist property. The traditional mentality persisted, and the main outcome of the law was an increase in rural violence, as landowners did everything in their power to guarantee their control over the land, going as far as setting up private armies to prevent the indigenous, black, and poor white people from getting their hands on it. (Caritas *et al* 2001, 15). The current model of land distribution is the result of this history of privilege and violence, and land remains highly concentrated in the hands of a small minority of families. Huge plots of land in the semi-arid region are dedicated to extensive rearing of livestock, or monocultural agriculture. The IBGE, Brazilian Institute of Geography and Statistics, reveals in a study carried out in 2006 that properties smaller than 10 hectares occupy less than 2.7% of rural area, whereas properties measuring more than 1000 hectares represent 43% of the total number of farms. (IBGE 2006, 107).

A contested land reform dispute has been going on for decades, and the civil society is nowadays pushing for new legislation replacing the land statute from 1850, in order to limit the maximum size of estates and to diminish the huge social inequality arising from the current land distribution system. Another worry is that if land ownership is not limited, foreigners and multinational companies have free access to buy as much land as they want. (Interview Cajazeiras, PB, 11.10.2010). Like the land, water resources also have tended to become privatized and enclosed, protected by fences and barricades. Great constructions such as dams and wells have proliferated throughout the *sertão*, which do not however adequately provide the population with water, but instead favor large estates and the agribusiness sector. Among the critics of the persistent inequality of land division is the CPT. The CPT (Pastoral Land Commission) was formed in 1975, during the military dictatorship, to contest the unequal land distribution and drive the idea of land reform. Its origin was in the land disputes mainly in the Pará and Amazon areas, but quickly spread to other regions as well, defying the power of large land owners and demanding rights for small farmers. The Commission is active to this day, and still struggles with the same issues, nowadays increasingly questioning the activities of the agribusiness sector. (Interview Cajazeiras, PB, 11.10.2010).

The question of land distribution was mentioned by many of my informants as the biggest obstacle to food security and well-being in the region. Driving through the *sertão*, I was shown huge plots of land belonging to prominent businessmen and members of the local elite, who had moved to cities and left these vast areas unattended and largely underutilized. Seu Roberto from Cajazeiras highlights another problem related to the polemic question of land reform in the area:

> The land reform in the semiarid is an interesting question; I do not think it can be done in unirrigated areas and with a patch of land smaller than 100 hectares per family. Otherwise you cannot survive. For a family to subsist in the semiarid, in an area that has no irrigation, the minimum size for a patch of land is 100 hectares. That is why the model in use, of giving out tiny plots of land (*asentamento*[17]) makes no sense; it just reinforces the band-aid approach. (Interview Cajazeiras, PB, 12.10.2010).

The "model in use" that Seu Roberto refers to is one advocated by the MST (Movimento Sem Terra), The Landless Peasants' Movement, among others. The idea is to provide landless peasant workers, who used to farm someone else's land but have

[17] Translates roughly to 'settlement'.

become unnecessary due to increased intensification of machinery use in agriculture, with small plots of land ranging from about 1 hectare to 10 hectares in concentrated areas called *asentamentos*. The goal of this approach is that these farmers can practice subsistence agriculture to provide for their own families' needs. The number of *asentamentos* has grown during the presidency of Luíz Inácio Lula da Silva, but as can be seen from Seu Roberto's statement, the reception has been varied to say the least.

2.1.5 Agribusiness

Para a indústria e para a agricultura	*For the industry and for the agriculture*
A ação tem que ser tecnológica	*Action has to be technological*
Em primeiro lugar se siga à lógica	*First of all, to follow the logic*
De que o ganho de um só não é fartura	*That gains for only one are not enough*
Produzir poluindo, isto é loucura	*To produce by polluting, this is insane*
Nossos rios precisam respirar	*Our rivers need to breathe*
Nossas águas têm sede pra matar	*Our waters are so thirsty they could kill*
Diminuam seus gastos descobrindo	*They would diminish the costs by discovering*
Outras formas de estarem produzindo	*Other forms of production*
Porém sem tanta água utilizar	*Without using so much water*

- *Abdias Campos: "Água".*

Among the most contested and criticized topics regarding both climate change and land use, taken up repeatedly by my informants and heatedly discussed in the seminars I attended, was the ways the agribusiness sector is operating. In recent decades, and even more so during the government of Luíz Inácio Lula da Silva, investment in the Northeast, and especially in the agricultural sector, has grown significantly. One could talk of a revolution in farm production. In ten years, from 1996 to 2006, the total value of the country's crops rose from 23 billion reais[18] to 108 billion reais, or 365%. Brazil's beef exports increased tenfold in a decade, overtaking Australia as the world's largest exporter. The country now has the world's largest cattle herd after India. It has also

[18] Currency of Brazil; singular *real*, plural *reais*.

become the world's largest exporter of poultry, sugar cane and ethanol. (The Economist, 26.08.2010).

How has this change come about? Mainly through the use of genetically modified crops, the technological innovations embraced by large-scale commercial farms, and the extensive use of agrotoxins in farming. Production has definitely grown significantly through the sale of unproductive farmland to agribusiness companies, and boosted the Northeastern economy substantially, also provoking improvements in infrastructure and industry. At the same time this development has, however, ignited a fervent protest by and on behalf of small farmers, who argue not only against the economic hegemony of these companies, but also protest that the use of genetically modified crops and agrotoxins presents a serious health threat to the population. There also seems to exist a tight link between the growth of the agribusiness sector and government policy: according to the Small Farmers' Movement (MPA), in 2009-2010 93 billion Brazilian reais were destined to agribusiness, whereas only 15 billion reais went to familiar agriculture. Thus, the large estates are receiving government subsidies disproportionally compared to small family farms. (Mendonça 2010, 7).

When visiting family-run farms, I was several times invited to taste "real, unpolluted vegetables and fruits" that do not cause cancer or my future children to have three legs instead of two. On more than one occasion I was told that the region's biggest evil was no longer the sovereign, corrupt political bosses, but the impersonal agribusiness companies polluting the soil and the air and buying the best farmland at very reasonable prices. These companies were often portrayed as the modern day equivalent of *coroneis* and *fazendeiros*[19], who exercise absolute power in the region thanks to their economic position.

In an interview with CPT representatives, I was told the following:

> There is a company called Santa Ana, a Brazilian company that produces for exportation. And they own a lot of land, 1000 hectares, in the hands of one sole company, fertile lands, water for production, and infrastructure. And on the other hand, there is the opposite: the farmers, who still fight for the right to a plot of land. The problem is, that these families are still waiting for land, and the government does not care, does not pay attention, to these questions.[…] All the infrastructure, that is government-owned, is at the service of capitalism.[…] Our biggest worry are those coming from the outside, the

[19] Plantation or estate owner.

> multinationals… they overuse the land, because they can reap benefit from it for a while and then take up and leave… they have not got the same relation to the land as the small farmers here, who have to plan generations ahead…the difference is that when the farmer leaves his terrain, his land, he loses the entire construct and plan of his life, everything he has worked for his entire life. (Interview Cajazeiras, PB, 11.10.2010).

Related to the worry of exploitative land use is therefore also the concern for the loss of means of subsistence for a large number of peasants. Without access to land there is always the threat of having to move to the city and try to find employment, an extremely difficult task for many having no or little formal education and few skills besides those related to farming.

2.1.6 Government policies and action

Seu moço eu sou emigrante	*Young man, I am an emigrant*
Venho de muito distante	*I come from very far away*
Do ressequido sertão	*From the dry sertão*
Vivo sofrendo por cá	*I live in suffering here*
Só voltarei para lá	*I will only go back there*
Quando houver irrigação	*When there is irrigation*
(Bandeira in Arons 2004, 128).	

As mentioned earlier, development in the Northeast was not for a long time on the list of the federal government's priorities. This has changed drastically with Lula[20] rising to power in 2003, and has resulted in large-scale development projects and increased financial investment and industrialization in the Northeastern states. However, what defined and remains unchanged about these development projects is their technocratic approach: the aim is not to combat poverty through a change in social structures in the region, but to 'solve' the problem of underdevelopment by means of large-scale infrastructural undertakings.

From as early as the 19th century, successive governments would seek a solution to Northeastern droughts by funding scientific studies and extensive public works projects,

[20] Commonly used abbreviation or nickname for Luíz Inácio Lula da Silva.

the so-called hydraulic or technocratic approach. In 1906, the first national government agency officially designated to fight the problem of regional drought appeared. This was the Superintendency of Studies and Works against the Effects of Drought, known more widely by its subsequent acronym, IFOCS (Federal Inspectorate of Anti-Drought Works). (Greenfield in Levine *et al* 1999, 102-103). IFOCS was the predecessor of what later became SUDENE, the Superintendency for the Development of the Northeast, an agency created in 1959 that had as its main goal the stimulation of economic growth in the Northeast. Despite growing public demand for increased use of irrigation, it was not until 1968 that SUDENE formed the Executive Irrigation Group for Agricultural Development, charging it with undertaking a study of irrigation possibilities. As a result of its report, the first irrigation plan for the Northeast was drafted in 1971, which established the goal of irrigating hundreds of thousands of hectares by 1980. Despite its visionary goals, SUDENE irrigated only 9 percent of its targeted land and helped only 4 percent of the suffering families it had intended to relieve. (Arons 2004, 100). The same pattern repeated itself over the following three decades: SUDENE favored capital intensive irrigation schemes that led to minimum results. According to Alberto from the town of Petrolina, located in the far interior of the state of Pernambuco, the undertakings of SUDENE´s irrigation schemes have actually widened the contrast between the rich and the poor:

> In the last 30 years due to SUDENE´s irrigation systems, those who get to plant on irrigated land, that is, mainly the wealthy, are still making profit, while those who have to plant on unirrigated land, the ones who were already living in poverty, have fallen deeper and deeper into misery. (Interview Recife, PE, 12.08.2010).

Another unfortunate consequence of poor planning and lack of professionalism among irrigation directors was the accumulation of 'irrigation refugees', people forced to relocate from their lands to make way for these huge infrastructural undertakings. Ironically, whereas before the *retirantes*[21] were mostly drought refugees, thanks to this approach their own government was spawning an internal refugee population of irrigation refugees in the name of progress and land reform. (Arons 2004, 101). The SUDENE ceased to exist in 2002, but with the present construction of the San Francisco River transposition, the ranks of irrigation refugees are once again growing.

[21] Rural-to-urban migrants.

The San Francisco River transposition project is a very polemic proposal that has long historical roots. As early as in the late nineteenth century the government of Brazil drew up plans for the transposition to help alleviate the impact of droughts in the *sertão*. (Arons 2004, 17). The proposal has been debated and at times rejected ever since, until in 2005 the Lula government decided to take up the project again. The San Francisco River is one the largest rivers in Brazil, covering 2800 km and stretching from the North of the state of Minas Gerais up to the border of Pernambuco. The river's course has already been altered several times through a number of dams, mainly destined to the benefit of agribusiness. The transposition consists of a set of canals and dams to link it over hundreds of kilometers to rivers in the semiarid area: three in the North, in the states of Ceará and Rio Grande do Norte, and three rivers in the East, in the state of Paraíba.

The main argument of the government and of those supporting the transposition is that it would once and for all solve the water supply problem in 4 northeastern states: Pernambuco, Paraíba, Ceará and Rio Grande do Norte. The argument goes that the project would benefit 8 million people, would generate 1 million jobs, and irrigate 300,000 hectares of land. However, even official reports of government sources state that at least 845 families will be removed from their livelihoods. (Malvezzi 2005). The representatives of the CPT in Cajazeiras, Paraíba, showed me pictures of terrains confiscated from family farmers in 2004, to whom were promised new plots of land to replace the ones lying on the way of the projected transposition. To this day, they are waiting for these promised plots. (Interview Cajazeiras, PB, 11.10.2010).

According to the public ministry's official report issued in 2001, at least 7,138 members of indigenous tribes will be directly affected by the transposition, and at least additional 34 indigenous lands and 153 afro descendant communities could as well be affected. (ref. FIAN 2007). Those who are against the project, mainly environmentalists and the population in the areas that have already been subjected to relocations thanks to the project, argue that the transposition will not only have a considerable harmful ecological impact, but will also benefit only large landowners and the agribusiness, not the millions of poor peasants it claims to help. The transposition would most likely promote an agrarian structure in the Northeast dominated by export-oriented agribusiness.

The general atmosphere of worry is also reflected in popular culture, including *cordeis*:

Como sofre o Velho Chico	*How the Old Chico suffers*
Com a tal transposição,	*Due to this so called transposition*
Repartida a pouca água	*The little water distributed*
Virará tudo sertão.	*Will change all of sertão.*
Se transformará num pólo	*It will be transformed into a centre*
Em irrigação de solo	*For the irrigation of soil*
Por tempo curto e perdido.	*For a short and useless time.*
É melhor analisar	*It is better to analyze*
Pra depois não vir chorar	*And not come crying afterwards*
Totalmente arrependido.	*Completely repentant.*

- *Felipe Júnior: "Os efeitos do aquecimento global"*.

The project is defended by powerful lobbies as providing water for the semi-arid Northeast, when in reality it reaches only a small percentage of the semiarid area, and the peasants whom it is supposed to benefit could be marginalized in the process. (FIAN 2007). Also the costs of the project are huge, already exceeding USD 6.5 billion, not to mention the costs of actually getting the water to the population, which would imply a sharp rise in the price of water in an already impoverished region. In an interview conducted with two representatives of the CPT in Cajazeiras, I was told that the cost of the transported water would be 5 times higher than it is at the moment. (Interview Cajazeiras, PB, 11.10.2010). The maintenance and long-term sustainability of the transposition also still remain vague. Those who oppose the project argue that there would be a number of less expensive, more viable, and more sustainable solutions that would actually benefit the target population a lot more efficiently. Among these solutions are cisterns designed to capture rainwater, the digging of wells, rock tanks for irrigation, among others.

The majority of people I interviewed were also very skeptical towards the alleged benefits of the project. Their main worry was the replacements of the population, the large-scale environmental impacts implied in the construction, and who the actual beneficiaries of the project are. It is not seen as a sustainable solution, and many argue that the actual benefit might go towards cities such as Recife and Fortaleza, and not the

diffuse population of the *sertão.* María, a representative of the FIOCRUZ, a research institute subordinate to the Ministry of Health notes, when asked whether the transposition will in her opinion raise the quality of life in the *sertão* and benefit the population:

> Benefit, yes, but the question is who? Because in Brazil it always goes like this: the benefit goes in general to those who have economic power. So, only the *fazendeiros* will benefit. The poor population can get… only an indirect benefit… The priority is not bringing water to the *sertão*, the priority is the land question, and control of that land. (Interview Recife, PE, 21.9.2010).

One of the indirect ways the poor can, and do, benefit from the transposition is by robbing water: they pierce holes in the pipes, thus through illegal means acquiring what in the media is presented as a precious gift to them. (Interview Cajazeiras, PB, 11.10.2010). José, a researcher in the Federal University of Pernambuco, was of the opinion that it is mainly the agribusiness that the water from the transposition will be directed to. "People might go to take their own with canisters, to get water, because the canal is open, right? But essentially I think it will benefit the agribusiness, because here it is always like that." (Interview Recife, PE, 23.08.2010). However, there were differing opinions about the transposition among my informants as well, with for example Seu Luíz praising the marvelous future the transposition will bring: "Ave María, thank God, in the future the water of the San Francisco will pass through here, only 10 kilometers away! What a joy, the droughts will finally end. It can only become better!" (Interview Águas Belas, PE, 07.10.2010). This statement reflects the other end of the spectrum, an exaggeratedly optimistic image of the transposition that is repeated in the mass media, creating for millions of people expectations that impede real debate and search for other solutions for the problem of drought in the *sertão*. Despite the promises made, many argue that the transposition is yet another outcome of the logic of the drought industry. Through huge infrastructural projects aimed at resolving the problem of drought, the elite manages to build political power and increase its influence in the region. In order to maintain the drought industry and justify these huge investments, it is also necessary to maintain the *mito da seca*, the drought myth.

Another notable worry among the informants, also brought up in the seminars I attended, was the carrying capacity of the San Francisco River. Alberto from Petrolina notes that according to what he had read, the San Francisco River was being more and

more invaded by sandbanks resulting from the cuttings of the vegetation on the riverbank. Thus, the river's flow is diminishing rapidly, and may in any case not be able to serve the other states where the water is intended to be transported, at least not in the long run. (Interview Recife, PE, 12.08.2010). This analysis was repeated by José Suassuna, an agronomist from the Federal University of Paraíba, who in a presentation (2010) argues that the river's hydraulic capacity is weakening rapidly, and has already reached its limits of use. This is also due to increased evaporation rates, and thus the debate has largely risen alongside the more general discussion on the effects of climate change in Brazil, and on the actions and policies the country should formulate regarding mitigating its effects in the future.

Brazil's size in geographic, demographic and economic terms makes the climate change problem rather complex. Despite this, it leads many other countries in promoting renewable energy sources, which already occupy an important share of the energy sector. The country has managed to curb its greenhouse gas emissions quite well, but has yet to deal with the specific vulnerabilities of different regions facing climate change. The biggest contributors to climate change in the country are deforestation, especially in the Amazon region, and methane gas emissions, resulting mainly from large-scale cattle rearing. (La Rovere & Santos Pereira 2007). From the institutional and legal point of view, however, Brazil has been taking initiative in order to tackle climate change. In 2008 a national climate change plan was drawn up, defining targets to be reached by promoting sustainable development in the industrial and agricultural sectors, maintaining a high proportion of renewable energy in the electricity production, encouraging the use of biofuels in the transportation sector, and reducing deforestation. (The Guardian, 08.10.2008). In 2009, Brazil passed its international climate change commitments to national law, when President Luiz Inácio Lula da Silva signed the National Climate Change Policy (PNMC), also known as law 12.187. The PNMC is ambitious and extensive: besides providing an explanation of thirty-two emissions reducing activities currently being implemented in Brazil, the PNMC also lists additional activities in the conception phase. However comprehensive the plan may be, many of the proposed activities are still in an early stage of development, recommendations rather than mandatory actions, or so far lacking specific targets or implementation measures. Despite this early stage, the law fills many legislative gaps in the national combat against climate change, and officially adopts Brazil's voluntary

national greenhouse gas reduction target of between 36.1% and 38.9% of projected emissions by 2020. (Robinson 2010).

Thus, in the legislative field and in respecting international commitments Brazil seems to be doing quite well. As mentioned above, however, Brazil's efforts at mitigating climate change related problems in specific regions of the country have yet been meager. In this respect the state of Pernambuco has actually been at the forefront by formulating a plan of action. In 2009, the state of Pernambuco, more specifically the Secretariat of Science, Technology and Environment (SECTMA), issued the State Action Program against Desertification and Mitigation of the Effects of Droughts (PAE-PE). This program is the result of a process of articulation, mobilization and consultation of various entities, including the national, state and municipal governments, civil society and the enterprise sector, aiming to ameliorate the threat posed by desertification affecting 90% of the state´s area. (SECTMA 2009, 11). It is also in part the result of a shift in paradigm; that is, before the end of the 1990s, most of the government action taken in the drought-prone areas was considered 'combat' action, that is, specific emergency campaigns realized after the situation was already grave. The area was considered a hostile environment, the effects of which had to be 'combated', help consisting mainly of giving out food and water after a drought hit an area. After the drought of 1997-1998, a new way of thinking, called "Living with the Semi-Arid" (Convivência com o Semi-Árido) took root, focusing not on how to deal with the effects of calamitous droughts, but how to adapt to life in the region on a sustainable basis. The PAE-PE also follows this new, adaptation-oriented view. The basic objectives of the program include establishing directives and legal and institutional instruments aimed at optimizing the formulation of public policy and private investment in the areas susceptive to desertification. The goal is to move on to direct action as well, through partnerships with different organizations, in colleting and storing water, developing basic sanitation facilities, and training both experts and locals. (SECTMA 2009, 23). At the moment, other Northeastern states are in the process of developing their action programs. Once the institutional apparatus has been adapted to focus more on the thematic of mitigating the effects of desertification, the direct action in the most susceptible areas will hopefully, in the near future, bring relief to the areas most in peril.

2.2 Climate change

Estamos vivendo um tempo	*We are living in times*
De um problema universal	*Of a universal problem*
Denominado por todos	*Called by everyone*
De aquecimento global.	*Global warming.*
Ele age devagar,	*It acts slowly*
Mas chega pra transformer	*But comes to transform*
Nosso sonho em pesadelo.	*Our dream in a nightmare.*
Pelos fatos que passamos	*By the facts that we know*
É certo que precisamos	*It is true that we need*
Fazer por onde não tê-lo.	*To do something to save us.*

-Felipe Júnior: "Os efeitos do aquecimento global".

2.2.1 General definition and future projections

There is a lot of controversy and disagreement regarding the definition of climate change, and especially its potential future outcomes. Some even question the entire phenomenon, and others debate the question of whether what we call climate change is a natural development or result of human action. In this study, I have decided to use the definition and predictions of IPCC, The Intergovernmental Panel on Climate Change. The IPCC defines climate change as follows:

> A statistically significant variation in the mean state of the climate or its variability, persisting for an extended period (typically decades or longer). Climate change, as defined here, may be caused by natural internal processes or external forcings or by persistent anthropogenic changes in the composition of the atmosphere or land use. (IPCC 2001).

According to the IPCC 4th Assessment Report from 2007, expressed as a global average, surface temperatures rose by about 0.74°C between 1906 and 2005. However, this warming was not steady, and had wide regional and seasonal variation. Particularly since the 1970s, warming has generally been greater over land than over the oceans. Seasonally, warming has been slightly greater in the winter hemisphere. (IPCC 2007). The recent warming period began in 1976, and it is estimated that world temperatures

could rise by between 1.1 and 6.4 °C during the 21st century. The best estimate for the low scenario is 1.8°C (*likely* range is 1.1°Cto 2.9°C), and the best estimate for the high scenario is 4.0°C (*likely* range is 2.4°C to 6.4°C). (IPCC 2007).

As one outcome of these projected changes in temperature, the IPCC predicts changes in precipitation patterns. In a warmer future climate, it is projected that there will be increased summer dryness and winter wetness. Summer dryness indicates a greater risk of drought. Along with the risk of droughts, there is an increased chance of intense heavy rains and flooding due to the greater water-holding capacity of a warmer atmosphere. This has already been observed, and is a trend that is expected to continue because as temperatures rise, rainfall tends to be concentrated into more intense events, with longer periods of little precipitation in between. Therefore, intense and heavy rains would be interspersed with longer relatively dry periods. Another aspect of these future changes is that wet extremes are expected to become more severe in areas where mean precipitation is expected to increase, and dry extremes are projected to become more severe in areas where mean precipitation is projected to decrease. (IPCC 2007).

Alongside these changes in rainfall, another trend in drought-stricken regions is the accompanying phenomenon of desertification, resulting more from human activities than from natural processes. Desertification is a worldwide phenomenon affecting about 40 % of the Earth's land mass. 70% of all dry areas suffer from desertification, accounting for 36 million km^2. The least developed countries are the hardest hit by desertification, and over one billion people in over 100 countries are directly affected by desertification, or are at risk. (UNCCD 2003). Desertification occurs because drylands are extremely vulnerable to over-exploitation and inappropriate land use (eg. deforestation, overgrazing, and bad irrigation practices). The main projected outcomes of desertification include increased poverty, loss of land productivity, loss of biodiversity, and internal and/or cross-border migrations of people. (World Bank 2011). Desertification is also considered as a factor in the loss of sustainability, efficiency and equity in resource allocation, and in the intergenerational distribution of well-being. (CEPAL 2005, 23).

As seen regarding desertification above, it is important not to forget the socioeconomic impacts of climate change. These include the costs of damages and the costs of adaptation, as well as benefits in certain areas where for example increases in

precipitation may increase agricultural yields. According to the IPCC, climate change is expected to have impact on several socioeconomic factors, including freshwater resources and their management, food, fiber and forest products, industry, settlement and society, and human health. Concerning freshwater resources, a frightening trend in vast areas of the globe is water stress, related to lack of access to freshwater resources. With respect to water supply, it is very likely that the costs of climate change will outweigh the benefits. One reason is that precipitation variability is very likely to increase. The impacts of floods and droughts could be mitigated by appropriate developments in infrastructure, and by transformations in water and land-use management, but all of these obviously entail costs. (IPCC 2007).

In addition to uncertainties about the impacts of future climate change on freshwater systems, there are several other factors, including demographic, societal, and economic developments that need to be considered when evaluating the costs of climate change. Costs and benefits of climate change may take several forms, including increases or decreases in monetary costs, and human and ecosystem impacts. An example of this is the displacement of households due to flooding and droughts. In addition to these displacements, in 2001 the IPCC warned of extensive migratory movements that could have serious political and social consequences:

> Human populations show significant tendencies to adapt to interannual variability of climate via migration, although migration may be the last of a complex set of coping strategies. […] A school of thought based on observations of several ethnic conflicts in the developing world suggests that environmental degradation, loss of access to resources, and resulting human migration (including 'environmental refugees') in some circumstances could become a source of political and even military conflict. (IPCC 2001).

2.2.2 Climate change in Latin America

Regionally viewed, the IPCC predicts that all of Central and South America is very likely to warm during this century. The annual mean warming is predicted to be similar to the global mean warming in southern South America but larger than the global mean warming in the rest of the region. Regarding precipitation, rainfall is expected to increase in Ecuador and northern Peru, and to decrease at the northern tip of the continent and especially in southern northeast Brazil. (IPCC 2001).

What has the biggest effects on climate variability in the region is ENSO (El Niño-Southern Oscillation), a complex interaction of the Pacific Ocean and the global atmosphere, resulting in changed rainfall patterns, floods and droughts (Matallo Junior 2009, 129-130). The region is vulnerable to El Niño, with varying impacts across the continent. El Niño, the warm oceanic phase, is associated with dry conditions in northeast Brazil, northern Amazonia, the Peruvian-Bolivian Altiplano, and the Pacific coast of Central America. In Mexico for example, the most severe droughts in recent decades have occurred during El Niño years, whereas southern Brazil and northwestern Peru have undergone unusually wet conditions. La Niña, El Niño's cool phase counterpart, is associated with heavy rainfall and flooding in Colombia and drought in southern Brazil. If El Niño or La Niña were to increase, Latin America would be exposed to these conditions more often. (IPCC 2001).

One of the most worrying impacts that these phenomena are projected to have is on agriculture. Agriculture remains a key sector in the regional economy, employing 30-40% of the economically active population on the continent. It also is crucial for the food security of the poorest sectors of the population. Studies based on GCMs (General Circulation Models) and crop models project diminishing yields for numerous important crops such as maize, wheat, barley and grapes. Increases in temperature are predicted to reduce crops yields in the region by shortening the crop cycle, thereby severely threatening subsistence farming in some parts of Latin America, including northeastern Brazil. (IPCC 2001). Threats to subsistence farming could naturally, in their turn, aggravate the possibility of famines, and lead to at least temporary migratory movement.

2.2.3 Climate change in Brazil

Mainly as a result of increased CO_2 concentrations, potential effects of climate change in Brazil suggest changes of up to 4-4.5°C in surface temperature for the year 2100. (De Siqueira *et al* 1994; 1999 ref. IPCC 2001). This places Brazil at the high end of even the highest projected scenario mentioned earlier. Brazil's fragile, biologically diverse ecosystems make it especially vulnerable to climate change. The tropical rain forest in the Amazon, the Pantanal wetland, and the semi-arid region of Northeast Brazil are of

particular concern. According to some studies, the rise in temperatures could lead to the Amazon rain forest becoming dryer, making spontaneous fires more frequent. These fires would release additional greenhouse gases, increasing their concentrations in the atmosphere, which in turn would raise temperatures further. Changes in rainfall patterns, especially in the drought-affected Northeastern region of the country, could lead to the impoverishment of water resources and a reduced water supply. The effect on agriculture could be devastating, putting food production in jeopardy. How exactly climate change will affect agricultural productivity is not yet understood in full detail, but possible effects on crops that are particularly important to the country's economy, including corn, soybean, wheat, coffee and oranges, are a great concern. Especially in the *sertão*, subsistence farming and food security are already at the moment a big concern, and could be jeopardized further, leading to the risk of periodic famines in unirrigated areas.

Decreased rainfall would also gravely affect the hydropower supply, which, according to the International Energy Association, provides more than 80% of the electricity Brazil generates. Destructive floods, which are already a serious problem for various regions, have in recent years been on the increase. Coastal areas are vulnerable to rising sea levels, affecting a great number of the population and economic activities. Finally, rising temperatures are expected to have consequences on human health, through the increased quantity of organisms that act as vectors for diseases, such as mosquitoes, which transmit dengue fever and malaria, and assassin bugs, which transmit Chagas disease. (La Rovere & Santos Pereira 2007). In the *sertão* prone to droughts, dry extremes will affect the quantity and quality of water available for sanitary and drinking purposes, which can trigger cholera and diarrheal outbreaks. (IPCC 2001).

In sum, Northeast Brazil is vulnerable to three main tendencies in different zones of the region. In the coastal areas the rise of average temperatures is already leading to a rise in sea levels. In the entire region, changing rainfall patterns related to El Niño y La Niña have lead to strong periodic droughts followed by unusually strong rains leading to destructive floods in several states of the region in the past years. In the interior hinterlands of the region, the combined effects of the rise of temperature, prolonged droughts and the unsustainable use of land (use of agrotoxins, slash-and-burn agriculture, deforestation etc.) has lead to vast areas being in danger or already in the

process of desertification. As mentioned earlier, in the state of Pernambuco 90% of the area is considered susceptible to desertification.

The reason I present the above review on the technical and scientific projections on the impacts and scope of climate change is that it shows not only the severity of the objective evaluations for the future, but also influences lay opinions on the subject. Obviously, these differ somewhat in their expression, and, on some points, in their experience, but as will later on be seen, the power of scientific "fact" is surprisingly strong in guiding popular opinion as well. Next, I turn to local perceptions of climate change gathered on the field.

2.2.4 Local perceptions of climate change

What surprised me during the interviews and my observations was that regarding the present situation and projected future outcomes of climate change, the informants' thoughts on the matter were surprisingly unanimous. A free listing exercise (Bernard 2006, 301-305) conducted with 8 of the informants interviewed, revealed several overlaps in the respondents' answers when asked to associate the first words coming to their mind related to the concept of climate change. 50% of the respondents mentioned "hunger" among the top 10 consequences, followed by "desertification", "drought" and "violence", in recurring order. Other expected consequences mentioned several times were "death" and "education/awareness building". (Interviews Recife, PE, 12.08.2010; 23.08.2010; 31.08.2010; 13.09.2010; 17.09.2010; 20.09.2010; 21.09.2010).

There was, however, variation between what were seen as the causes of climate change, and how the effects should be mitigated, depending on where the informants were from. Those from Recife and the coast mentioned littering, and pollution from industry and cars as the main evils causing global warming. The expected effect most cited was a rise in sea levels, that in the future according to many could cause problems especially for slum dwellers living next to the sea and lacking in sanitation and sewage systems. I attended an activity with local Greenpeace activists in Olinda, a small city next to Recife, where they were cleaning the beach from waste, and it was intriguing to note that when these activists were chatting with sunbathers, they often mentioned climate change when trying to persuade people to collect their trash and recycle. Inland in the

sertão, however, the most cited elements causing climate change were deforestation and the use of agrotoxins by large companies, that according to my informants pollutes the atmosphere. The expected results were desertification, salinization of the soil, air pollution and lack of water resources. When asked what should be done to combat climate change, almost uniformly the answer in the *sertão* was agro-ecological farming, which according to the informants both curbs the use of agrotoxins and leads to less deforestation, as the land is used more efficiently, with more crops with different growth cycles being planted on the same plot of terrain.

Below I present some excerpts from interviews conducted both in Recife and the *sertão* that shed light on how my informants have experienced climate change in their own lives, and what they expect from the future.

Felipe, working in Recife but originally from the interior town of Petrolina in the Pernambucan *sertão*:

> R[22]: What do you think, in which way can you see them [changes] already?
>
> F: More specifically? Um, I think that the change in seasons, there it doesn´t rain anymore, because of climate change, understand, and it will rain even less, or when it rains it rains a lot more, like that.
>
> R: Right, so droughts and floods?
>
> F: Droughts and floods, exactly… There... have been these prolonged droughts, a lot nastier, and when it rains that also floods everything. I think there that is the main thing. And there is going to be more of it. And this thing of desertification as well, that you will see already, just observe and you'll see it already, it really is… (Interview Recife, PE, 20.09.2010).

María, working at FIOCRUZ Recife:

> The future will not be very different from the present. In the sense that… the big players, they have resources, instruments, all sorts of capital, right, talent, economic capital, financial capital, in order to resolve these problems. Developing countries will follow, Brazil dealing with how the country was structured, especially the cities, the urbanization process was without planning. It is a frantic development that we are talking about, and that has already caused serious problems, also environmental ones. It is about delaying the problem. Ten years from now it will be worse, because what is happening is completely untypical, the world is already... The environment, nature has already reorganized itself. Human nature as well, our whole living environment… So the future is somewhat frightening, if we do not act now, TODAY… But on the other hand I think that there is movement, on behalf of the new generations, children, for the earlier generations everything was a culture of wasting, a culture of the "unlimited" if you will. […] As a matter of fact, that conscience is already there... People already feel the changes in their

[22] Riikka, referring to myself.

> everyday life: 'Oh, it´s hotter'; 'oh, it´s raining in September, it´s irregular', 'oh, the sea-level is rising', 'oh, there´s no clean drinking water' 'oh, our health is deteriorating', 'oh, the dengue is here…' So, it is felt, but the question is what to do? (Interview Recife, PE, 21.09.2010).

Mateo, member of a communal farmers' organization in the municipality of Cacimbas, Paraíba:

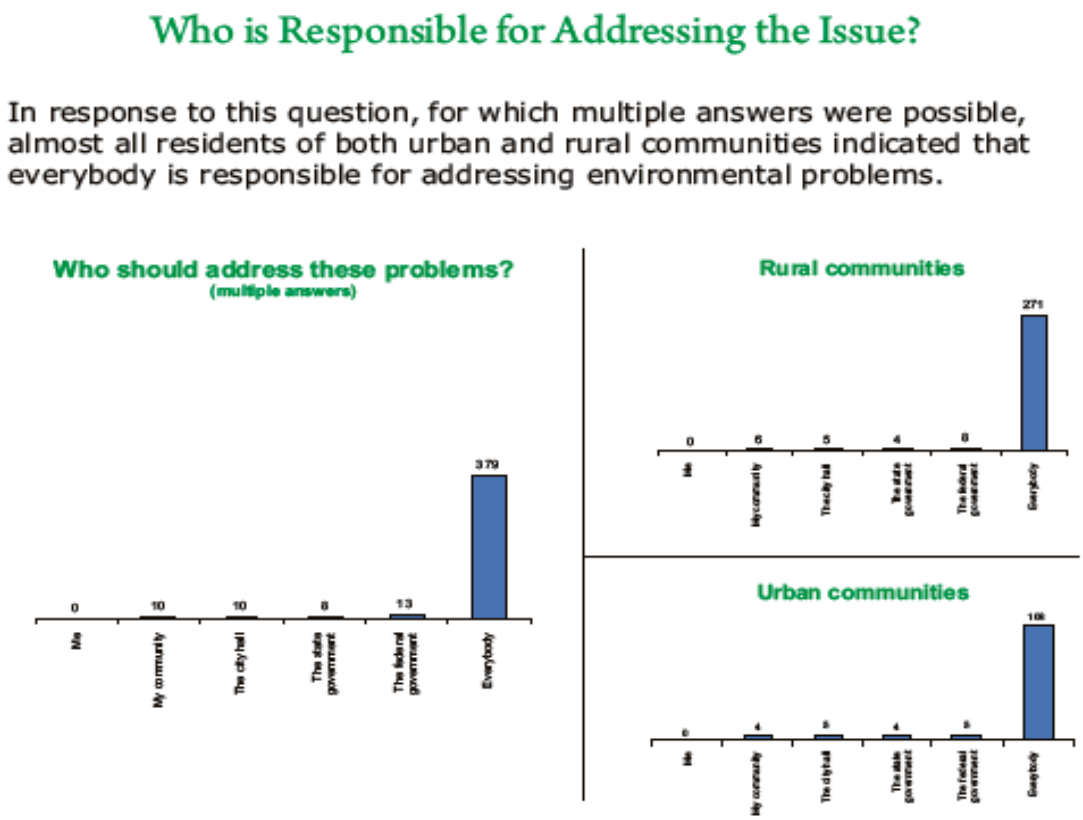
> I think one important thing to mention here is, that from 1993 till now, when it began… or when we started to notice this question of climate change here… if you talk with the farmers, they tend to have the following discourse: "look, agriculture is not worthwhile anymore." And when they say agriculture, they mean subsistence farming, like maize, beans, on that no one lives nowadays in the countryside, producing only those. And that is due to the climate change, right, the irregularity of rains, the rise in temperatures, all that makes production fall every year more and more, right? It has also influenced the fertility of the soil. And that woke them up, the farmers, to have a vision of developing production more extensively, right? Because before they only planted maize, beans and broad beans. Nowadays, they also plant maize, beans and broad beans, but they try to have a more systemic view of how to use their property, by diversifying, by having variety. (Interview Cacimbas, PB, 14.10.2010).

Gilson and Raquel, CPT representatives from Cajazeiras:

> There are some areas, around here, where the land has become useless due to the ways the land has been used. The soil has become too poor for farming, because of salinization resulting from these irrigation schemes and toxins. (Interview Cajazeiras, PB, 11.10.2010).

A survey titled "Climate Change and Poverty: How Local Communities see the Problem", conducted by the Brazilian Forum on Climate Change in 2009 organized by COEP (Committee of Entities Against Hunger and For Life), came up with similar results concerning local perceptions of climate change. Of the respondents, 74% live in the Northeastern semi-arid region, and therefore the results of the survey are comparable with those I gathered in my encounters with the informants. Both rural and urban communities were consulted, but there were no considerable differences in their responses to the questions I highlight here. According to the study, 94% of the people interviewed believe that the climate has been changing through the years, and 87% of the respondents believe that climate change is already affecting them. When asked what has changed, the three most common answers were "higher temperatures", "variations in rainfall", and "variations in water levels in rivers". Thus, most of the results obtained through the survey point to the same general direction as the answers I got on the field. However, a point in the survey I found very interesting, and which will be discussed

more later on in this study, is the question of responsibility and accountability. In the following figure are the results obtained in the survey regarding responsibility for addressing problems resulting from climate change:



Source: COEP, Brazilian Forum on Climate Change, 2009.

What can be gathered from both the survey, and the testimonies I collected is that there seems to be a consensus that climate change is actually happening, it is already being felt, and the trend is expected to grow in the future. Reflecting the projections by the IPCC, its most notable manifestations were also mentioned by my informants to be irregular rains and the rise in temperature, both of which were felt to affect agricultural yields at the present time and in the future. Diversifying production and using less toxins were also seen as solutions for mitigating the effects. As will be seen later on, a moral dimension was also strongly linked to this argument of agro-ecological family farming, as it not only is perceived to promote sustainability of the environment, but also to challenge power structures and promote social equality. This point will be elaborated on in more detail in the fourth chapter, but suffice it to note here that almost invariably in the countryside, mentioning climate change lead to discussions about agro-ecological farming and problems related to land use.

3 THEORY

As mentioned in the introduction, poverty can be conceptualized and analyzed from a number of different perspectives. I have chosen to focus on poverty not as mere material lack, but on the structural, historical and cultural forces behind it. Therefore I will proceed in this chapter from poverty seen as structural violence to a theory of global risk society, linking structure to the postmodern era, and will finally complement these two theoretical frames with ideas of forms of resistance used to the poor to combat and criticize their situation.

3.1 Structural violence

To summarize, the term 'structural violence' originates from peace researcher Johan Galtung, who defined it as "*violence which corresponds with the systematic ways in which a given social structure or social institution kills people slowly by preventing them from meeting their basic needs*." (Galtung 1996, 200). Structural violence is, according to Galtung, deeply embedded in social institutions, and repeated through everyday action once the structure has been formed. It is the avoidable impairment of fundamental human needs, which lowers the individuals' *potential* of leading a fulfilling life. This type of violence manifests itself as inequality in the division of resources, the access to political power, in education, health care and legal position, to name a few. (Farmer *et al* 2006). According to Galtung, the archetypal violent structure has exploitation as its centre-piece, meaning that the 'topdogs' get much more out of the interaction within the structure than the 'underdogs'. The violent structure leaves its mark not only on the human body, but also on the mind and the spirit. There are four reinforcing components in a violent structure, that support exploitation: penetration, which implants the topdog into the life of the underdog; segmentation, providing the underdog with only a very partial view of what goes on; marginalization, in other words keeping the underdog on the outside, and fragmentation, keeping the underdogs away from each other. All these components work together, in Galtung's view, to impede consciousness formation and mobilization within the ranks of the underdogs. (Galtung 1990, 294).

Another important feature of structural violence is its relation to direct violence: "Violence breedes violence", as Galtung puts it. Structural violence is needs-deprivation, to which one potential reaction is direct violence. However, Galtung notes that structural violence can also lead to "a feeling of hopelessness, a deprivation/ frustration syndrome that shows up on the inside as self-directed aggression and on the outside as apathy and withdrawal". Of the potential outcomes of structural violence, Galtung argues that obviously, given the choice between a violent mass and an apathetic society, topdogs tend to prefer the latter, choosing governability over anarchy. (Galtung 1990, 295). This conceptualization of the potential outcome of structural violence bears strong resemblance to Oscar Lewis' theory of a 'culture of poverty'. Lewis' contested and often criticized argument goes that among the poor there exists a particular subculture, that is perpetuated from generation to generation and leads to a feeling of marginalization, helplessness and inferiority. According to Lewis, the people living in a culture of poverty are have very little sense of history, "know only their own troubles, their own local conditions, their own neighborhood, their own way of life." They thus generally do not participate actively in community life and take little or no political initiative. (Lewis in ed. Guillemin 1981, 317).

It must be noted, however, that Lewis' theory received strong critique already as far back as the 1960s, mainly due to its assumptions that the poor form a 'subculture' somewhat separate from the rest of society, and that the "traits of the poor are the cause of the traits of the poor": that is, the theory confused the causal and descriptive conceptions of poverty. (Roach & Gursslin 1967, 392). The reason I have mentioned Lewis' theory in this work is to critique Galtung in this sense, as I see a strong resemblance between the two arguments that both victimize the poor without questioning this hypothesis. The strenght of Galtung's theory of structural violence is that it highlights the systematic, institutional and intergenerational aspects of poverty. Poverty and misery do not arise from thin air, cannot be blamed on the poor themselves, and tend to repeat themselves from one generation to another. Galtung also manages to separate the definition of poverty from purely materialistic viewpoints by not focusing on the lack of material needs but the fulfillment of potentials. However, the weakness in Galtung's conceptualization lies in his theory remaining at a very abstract level, and almost completely ignoring the question of accountability.

Paul Farmer (2005) took Galtung's theory a step further and linked it to the question of human rights – his argument being that certain basic human rights, such as the right to health care, are seriously violated by lack of access to them arising from the structures of society. This is an interesting move since traditionally human rights violations have been attributed to a recognisable perpetrator – be it the government, a terrorist group or an individual, there is always someone to *blame* and someone responsible. To call structural violence a human rights violation thus implies that there are real flesh and blood people behind policy decisions leading to misery, and institutions, as natural and incontestable as they seem, can be changed in the course of time. Why does finding the responsible matter? Because taken from the human rights point of view, it has important implications for legislation. The international human rights legislation is still very much focused on getting someone on trial – when misery is attributed to 'the way things are', this is obviously impossible. To take the passing of national laws for example, it is much harder to pass a discriminatory law if in the face of the international human rights code this violates some basic principles. I will return to the question of accountability in the next subchapter in the discussion on the theory of risk society.

To return to Farmer, in his book *Pathologies of Power: Health, Human Rights and the New War on the Poor*, he views the problem of structural violence especially from the perspective of inequality of health, and focuses on how the structures of a given society are an important factor behind the rise of epidemics. As examples Farmer points to the spread of HIV/AIDS in Haiti and the tuberculosis epidemic in Russian prisons. Another leading thought in his work is discovering the links between structural violence and political and economic change. According to him, the dominant neoliberal economic policy has created a situation where medical knowhow and care has become a commodity, and where the system is ruled by the laws of free market. This view of medicine-as-commerce arises, according to Farmer, from the dominant economic regime, and it increases social injustice by eliminating the safety networks previously managed by the state from the weakest and most marginalized groups in society. (Farmer 2005, 161-164). His main line of thought can be summed up as follows: "Suffering is 'structured' by historically given (and often economically driven) processes and forces that conspire – whether through routine, ritual, or, as is more commonly the case, the hard surfaces of life – to constrain agency" (Farmer 2005, 40).

In other words, the range of opportunities is more closed and human agency more constrained for the disfavored than for the privileged members of a given society. This has, according to Farmer, direct implications for human rights issues – as states weaken, the role of nongovernmental institutions and private businesses increases, but "it is also easy to discern a trap: the withdrawal of states from the basic business of providing services usually means further erosion of the social and economic rights of the poor" (Farmer 2005, 244). Although Farmer focuses on health, I think it is interesting to see if the theory can be extended to analyze environmental hazards as well. The growing trend of linking environmental rights with human rights also has brought the discussion of rights to the climate change discourse, and as the general belief is that the poor and marginalized will also be the first to suffer from the effects of climate change, I think linking these theoretical discussions is rather logical.

What makes Farmer's argument rather leftist is the fact that he mainly puts the responsibility on a competition-driven market economy and the neoliberal policies directed at developing countries by actors such as World Bank and the International Monetary Fund. He also sees the role of states and governments in ensuring human rights for their citizens as critical – something that can of course, be seen as a call for strong state intervention in economic and political issues, and that can definitely be contested. So, the analytical concept of structural violence is, undoubtedly, problematic, as shall also be seen further on: it can definitely be blamed for explaining 'nothing and everything', and for taking the focus away from the individual action of the subjects themselves. It has been accused of putting all the responsibility on the state, and of having a rather uncomfortable leftist tone to it. However, it does in my opinion avoid some of the traditional pitfalls of conceptualizing development and poverty, such as taking poverty as a status quo that 'just happens', that is not the result of underlying structures, or worse, the blaming of people themselves for their poverty. The strength of the argument, to my mind, lies not in blaming Western imperialism for the suffering of the Third World poor, but in the fact that calling a form of poverty 'violence' and linking it to human rights implies that someone somewhere is responsible, and that there is a chance of influencing policy instead of seeing poverty as a force that sweeps the Third World due to accident or worse, due to its own inability to rise out of it. It is a moral stand.

To my mind, the term could be useful in actually avoiding the trendy argument of poverty being a result of Western imperialism, if it were to attribute the reasons not only to foreign influences but to *local* structures that may very well arise from the local cultural context. I think the problem is that the term is not one originating from anthropology, but peace research, and has not been widely applied to different contexts in anthropology. Even in the works of scholars such as Farmer, the term undoubtedly retains its tone of blaming the current global economic regime as the root cause of poverty and misery. I still cannot help but wonder what would happen if the definition were extended to include the local cultural framework and its pitfalls as well – at this point I would not blame the term, but rather its narrow applications. Its strength as an analytical concept in the discourse on poverty can, in my opinion, be attributed to the fact that it goes beyond describing what is obvious to 'the naked eye', and forces us as social scientists to focus on the invisible forces and structures at work behind the phenomenon of poverty.

3.2 Risk society in the era of ecological hazards

As noted earlier, one of the weaknesses of the concept of structural violence lies in the fact that it is relatively bound to critique of the state as a political actor. It often presupposes institutions under control or within the sphere of influence of the nation-state, which is a problematic starting point in the postmodern era of globalism where the states' role has at least changed, if not diminished. Also placing the focus on social structure draws attention away from individual responsibility, action and resistance. This is why I have decided to supplement the theory of structural violence with notions of the risk society and later on, with James Scott's theory of peasant resistance, placing the problematic of climate change and postmodern hazards in a theoretical context I feel is more suited to the era of globalization and post-industrial society. Ulrich Beck manages to raise interesting questions regarding ecological hazards as invisible threats and projections in the sphere of the unknown, the near future, and a now where power-relations are redefined by the emergence of new powerful actors such as the scientific community, the civil society and multinational companies. The fact that ecological hazards, including climate change, redefine the roles of those potentially held

accountable and have an impact on the lives of practically all actors involved with disregard to state boundaries and social class, and extend to an unforeseeable future, calls for a theory that takes these factors into consideration.

Beck's theoretical framework consists of three inter-related components: risk, individualization, and reflexive modernization. He points to a dynamic that is driven by an increase in global risks and in the ability of science to detect increasingly invisible risks, leading to a complete re-ordering of social positions in society, and to a transformation in the cultural meanings of risk. Beck argues that what differentiates the contemporary era from its past are new categories of risk that, unlike in the past, are no longer circumscribed spatially or temporarily. The risks of nuclear radiation, modern technologies, greater mobility of diseases, global warming, invasive species and many other challenges expose virtually all people around the globe to common risks. By reflexive modernization Beck means that while threats have been faced and confronted throughout human history,

> society today is *confronted by itself* through its dealings with risks. Risks are the reflection of human actions and omissions, the expression of highly developed productive forces. That means that the sources of danger are no longer ignorance but *knowledge*; not a deficient but a perfected mastery over nature; not that which eludes the human grasp but the system of norms and objective constraints established with the industrial epoch. (Beck 1992, 183).

What further separates the postmodern era from the early days of modernization is that the social order during the latter was centered on economics, especially the distribution of economic output. This distribution was directly tied to social class, with those at the top getting more and those at the bottom getting less. This ordering echoes Galtung's and Farmer's theory of structural violence as well, with the 'topdogs' oppressing the 'underdogs'. In Beck's opinion, this order of things has been turned upside down in the present era. (Rosa 2006). While the earlier social ordering according to economics centered on the distribution of wealth in a stratified and class-specific pattern, there is now a systematic difference in the type, media and pattern for the distribution of risks. This does not, according to Beck, mean that risks are not often distributed in a stratified way, or that social class does not matter. Poverty still attracts an unfortunate abundance of risks, whereas the wealthy (in income, power or education) have the opportunity to *purchase* safety and freedom from risk. (Beck 1992, 35). However, what happens with the expansion of modernization risks, such as the endangering of nature, health, nutrition, and so on, is that the social differences and limits are relativized. There is a

controversial dynamic at play: on the one hand, like wealth, risks adhere to the class pattern, only inversely, with wealth accumulating at the top, risks at the bottom. (Beck 1992, 35). To that extent, risks seem to *strengthen*, not to abolish, the class society. On the other hand, risks display an equalizing effect within their scope and among those affected by them. "Reduced to a formula: *poverty is hierarchic, smog is democratic*" (Beck 1992, 36). No one is automatically spared from phenomena such as global warming or nuclear threat. New social risk positions open up. Thus, risk societies are *not* exactly class societies; their risk positions cannot be understood as mere class positions, or their conflicts as solely class conflicts. (Beck 1992, 36). In the global risk society, knowledge as capital gains an important role: wealth can be *possessed* but one can only be *afflicted* by risks. Risks are, so to speak, *ascribed* by civilization. "Bluntly, one might say: in class and stratification positions, being determines consciousness, while in risk positions, *consciousness determines being.* Knowledge gains a new political significance." (Beck 1992, 23).

In his analysis of the risk society, Beck focuses mostly on the nuclear threat, toxins used in industry, and pollution. He does mention climate change a number of times, but at the time when he formed his main arguments (early and mid-nineties), the climate change discourse had not reached the same momentum it has now. So, it is important to ask, are Beck's insights applicable to the discussion on climate change? In her article *Governing climate change: the politics of risk society?* Harriet Bulkeley argues that several characteristics of climate change epitomize Beck´s definition of the experience of risk in postmodern risk society. First of all, the causes of climate change arise from modernity itself:

> Apparently innocuous and invisible gases, such as methane and carbon dioxide, released as by-products of development (the industrialization of agriculture, increased energy consumption and economic growth) change the composition of the atmosphere with untold consequences. This accords with Beck´s supposition that in risk society, risks arise not from a lack of modernity, as hazards associated with poverty and underdevelopment might be conceived, but rather as the side-effects of modernization. (Bulkeley 2001, 431-432).

I think this is an extremely important point in conceptualizing poverty in the post-industrial era, closely linked also to the concept of structural violence: poverty is not to be defined as solely material needs deprivation, but as new forms of threats and limitations to well-being resulting from modernization itself. Climate change is a good

example of Beck's argument that in the risk society, the concern shifts from the 'distribution of goods' to issues surrounding the 'distribution of bads' (Beck 1992, 35).

The earlier mentioned role of knowledge in the definition of risks cannot be underestimated. It is important to bear in mind that threats such as climate change, although more and more perceivable each day, remain largely invisible, and as such dependent on expert knowledge. Things such as income and education are consumable goods that can be experienced by the individual. However, the existence of, and the distribution of risks are "*mediated on principle through argument.* That which impairs health or destroys nature is not recognizable to one´s own feeling or eye, and even where it is seemingly in plain view, qualified expert judgment is still required to determine it 'objectively'." (Beck 1992, 27). This leads us to consider the power of science. In risk society, science becomes the principal institution for defining, identifying, and analyzing risks. However, through its engagement in the traditional role of generating new discoveries and new technologies, science inevitably also adds to existing risks. Science thus becomes a double-edged sword: it not only defines and seeks solutions to risks, but also partakes in their creation. (Rosa 2006). What is also often forgotten is the fallibility of science, and its dependence on decisions, methodology, and context. Different studies portray a different reality, and different projections of the future. Beck declares that "technology and natural science have become one economic enterprise on a large industrial scale, without truth or enlightenment, comparable to the secular power of the Medieval church without God." (Beck 1995, 119). However, as knowledge becomes power, science is needed to legitimate action, be it in the political sphere or in the actions of the civil society. For example in the case of climate change, action depends on how the threat is defined, who are seen as the players in the game, and what the future is projected to be like.

Mary Douglas and Aaron Wildavsky (1983) also take up the subject of the relativity of risks in their book *Risk and Culture*. Their main argument is that risks are always socially defined, and different social settings affect what risks are perceived most threatening and receive the most attention in a given society. Unlike Beck however, who focuses on the power of modern Western science in the definition and mitigation of risks, Douglas and Wildavsky conceptualize the theme on a larger scale. The definition and ranking of risks reflects the way a society is institutionalized, and is not merely the result of the power of a technocratic, scientific approach. The authors recognize three

institutional types which partake in public decision-making: two that uphold the central power, these being market and hierarchy, and one representing the border, referred to as sect. All three provide a theory of how society should be organized and an explanatory philosophy to justify the lifestyle chosen. (Douglas & Wildavsky 1983, 175). In environmental affairs, the most prominent and outspoken of these three institutional types is the sect, encompassing the civil society, environmentalists, etc. The sect works on an egalitarian principle, is diffuse in its organization, has no hierarchical structure and minimum bureaucracy. Its very form makes it therefore fit to deal with and highlight global issues, not local ones:

> Sects need to speak on behalf of the whole of mankind, not for a few millions. Physical nature is their best substitute for God, not only because nature is powerful and unpredictable. The bias against elaborate institutional forms makes nature the appropriate good counterpart to defend against bad central society. (Douglas & Wildavsky 1983, 125).

Sects also have several characteristics in common that make them apt for voicing out critical thoughts against the actions of the market and state – they regenerate moral fervor, they portray their agenda as a counteraction against a "global conspiracy of evil", they prefer small-scale organization and their values are opposed to big industry, big organization, and big technology. (Douglas & Wildavsky 1983, 139).
The civil society's important role in voicing out environmental concerns has been established above. But what makes environmental hazards and climate change rank so high in the list of potential risks to human safety? Douglas and Wildavsky argue that in the postmodern era, pollution ideas are an instrument of control, and as such the question is strongly tied to the global political context. The role of the state has in recent times if not diminished, at least changed drastically in most countries: "when the central establishment is strong, it holds the monopoly of explaining the natural order." (Douglas & Wildavsky 1983, 47). However, in a world where the capitalist market and the state are engaged in a constant competition, the central establishment weakens, opening up the stage for new actors to engage in global discourses. Nature, in both western and non-western societies, is not merely a subject for contemplation and curiosity, but is tightly linked to questions of power and prestige. Just as nature is not 'only nature', environmentalism is not essentially an objective response to external threat, but rather one of the typical ways in which social groups bring to light internal tensions and concerns for social accountability. (Richards & Ruivenkamp 1996, 282).

In the era of increased individualization, the voluntariness or involuntariness of risks also becomes an important point of debate. There are, on the one hand, risks that are individually chosen, and thus more acceptable to the individual, such as extreme sports or martyrdom, and on the other, risks that are involuntary, seen as unjust, and should from the citizens' point of view be controlled by law. The boundary between voluntary and involuntary risks therefore leads to a moral judgment of who is to be held accountable. (Douglas & Wildavsky 1983, 20). Collective, involuntary risks tend to rise to the forefront irrespective of culture or time due to this moral evaluation. "To pretend that there are no moral judgments involved in recognizing which are the most threatening dangers is equivalent to the tribal consensus that attributes a punitive moral regard to the seasons and stars." (Douglas & Wildavsky 1983, 30). Of course, each culture and era has its own ideas of what is normal or natural: if child death, disease or the incidence of accidents is held to be normal, no one is blamed. This idea of normality, however, naturally changes with new knowledge, and since in the postmodern societies science is mainly responsible for creating that knowledge, it has a distinctive role also in the definition of risks. (Douglas & Wildavsky 1983, 35). Also novel technologies are essential elements within social discourse and practice. They emerge from institutional settings, and serve as a subject for intergroup contestation. The language of technological change is also a moral discourse, as different social groups view the future in different ways. (Richards & Ruivenkamp 1996, 275).

The power of knowledge and yearning for scientific 'facts' was extremely interesting to note on the field in Northeast Brazil as well. Pamphlets and educational material explaining climate change to farmers and peasants abound, and one of the main worries expressed by experts and NGO workers regarding climate change and the future was precisely lack of *knowledge*. Contextualized education, and providing 'facts' legitimized by expert institutions such as the IPCC among others, were seen as indispensable ways to combat problems such as desertification and potential future water stress. Added to this, most of the solutions brought forth by the NGOs working on the problem of drought on site involved technological innovations – differing from large-scale infrastructural projects of the government, true, but nevertheless technological solutions, be they cisterns, rock tanks, or other cost-effective ways to capture rainwater. The diffusion of information by the media and by charity organizations and NGOs is definitely bearing fruit: I still find it amazing that in the

hinterlands of Northeast Brazil, where literacy rates remain low and many of my informants had never left their home region, practically everyone could explain to me what climate change was about, what causes it, and what is foreseen to happen in the future in rather technical-scientific terms.

Another central point in the politics of risk society is so called conflicts of accountability, in other words how the consequences of risk can be controlled and mitigated. The novel conceptualization of threats and hazards leads to consider political questions. In the postmodern risk society, the political institutions of modernity are irrelevant, inadequate and impotent. Decision-making power, control and legitimacy increasingly locate outside the political sphere, and find root in economic, technological, and scientific communities and consumption sites. (Bulkeley 2001, 431-432). Thus, there are three key aspects concerning the political possibilities of contemporary risk: first, that the politics of risk society are not conducted primarily through the centralized formal political system; second, that in risk society, the formal political system is weakened; and third, that it is within 'subpolitics' that conflicts of accountability will be resolved or ignored. 'Subpolitics' refers to new concentrations of power, such as economic, technocratic and scientific circles, that have become key players in the contemporary era. (Bulkeley 2001, 434).

What does this mean for the role of the state? A new movement is launched, which runs counter to the accomplishments of the welfare state project in the first two-thirds of the past century. Whereas politics then acquired the power potentials of the 'interventionist state',

> now the potential for structuring society migrates from the political system into the sub-political system of scientific, technological and economic modernization. A precarious reversal of politics and non-politics occurs. *The political becomes non-political and the non-political political*." (Beck 1992, 186).

This leaves the state in an uncomfortable role: on the one hand, there remains a fixation on the formal political system as the exclusive center of politics*;* on the other, increasingly the state has *limited* intervention capacity in relation to modernization in industry and research. (Beck 1992, 187). Beck further highlights this paradox by commenting that

> the growing political power of hazard leads to a growing call for the state to take authoritarian measures, which defend its own authority while technical safety constructs

> disintegrate. To the failure of engineers is added that of policy, law, science; investments turn into losses of billions and markets collapse. This domino effect forces the state into a kind of defensive aggression, in which some day perhaps even talking about hazards will be punishable." (Beck 1995, 167).

So, where does this leave the state? The opposing calls for an authoritarian, interventionist state and the reality of the state's weakening role as the sole platform of political decision making would seem to lead to a situation that largely benefits industry. "In relation to the state, industry possesses a double advantage, that of the *autonomy of investment decisions* and the *monopoly on the application of technology*" (Beck 1992, 212). Whereas Farmer highlights the importance of the state in guaranteeing a level of well-being for its citizens and taking responsibility for their basic needs, Beck argues that the state may no longer be in the position to do so, at least not effectively. The problem lies in the relations between the state, industry, and science: science introduces innovations with a clear conscience, industry acts based on those innovations, but does not regulate, whereas the state tries to regulate something over which it has no real influence. These relations work under the cloak of 'progress' and 'development', which according to Beck is an institutionalization of social change into a position of organized non-responsibility: "The *non*-responsibility of science corresponds to the *implicit* responsibility of the businesses and the *mere responsibility for legitimation* of politics." (Beck 1992, 214).

The question of responsibility also relates to the principles of the legal system; in the eyes of the law, it is generally the *individual* that can be held accountable. Thus, what needs to be defined from a judicial point of view in order to prosecute, that is, lay responsibility on someone, is a cause-effect relation, for which a particular individual, or group of individuals, can be found guilty. This obviously does not accord with the nature of global environmental hazards. Once again, as with the theory of structural violence, we are faced with the dilemma of being able to define the problem, but not acting upon it. As Beck declares: "Everyone is cause *and* effect, and thus *non*-cause. The causes dribble away into a general amalgam of agents and conditions, reactions and counter-reactions, which brings social certainty and popularity to the concept of system." (Beck 1992, 33). Institutions continue to work according to their old roles without a transformation suited to the risk society, leading to a situation where risks are 'normalized' away. Regarding climate change, the fact that a single substance cannot be proved as the cause results in a situation where the international production of

substances aggravating the problem defies the culpability of a single company or perpetrator responsible. Thus the individual character of criminal law works in favor of collective non-responsibility. (Beck 1995, 131-132).

So what is the collective result of this generalized non-responsibility? Beck suggests that among the 'victims', forced to live in closest contact with ecological hazards, the situation may lead to what he designates "the death-reflex of normality", that is, a tendency not only to accept the risks, but to deny their existence completely and carry on as though they do not exist. (Beck 1995, 48). His argument goes that ecological protest does not begin with the poor; it is ignited among middle-income, educated folk. (Beck 1995, 54)- This assumption, as mentioned earlier, is repeated in both Galtung's theory of the potential outcomes of structural violence, and Lewis' theory of the 'culture of poverty'. However, Beck offers a competing hypothesis, related to the generalization of hazards: that in the risk society, a possible outcome is also that of new alliances, and unification of victims. The global hazards of today, including climate change, may "contain within themselves a grass-roots *developmental dynamics that destroys boundaries*" (Beck 1992, 47).

My observations on the field in Northeast Brazil suggest that there is considerable variety in the way the farmers and peasants react to the problems and threats posed by the current social structure and climate change. Among some there indeed existed a mood of resignation, and bitterness towards large multinational firms, the government, and other actors who were held responsible for the situation. I also heard second-hand reports of open resistance and even direct violence by those fighting for their rights to land and subsistence; these were mainly indigenous communities, and their clashes with large landowners tended to be somewhat sporadic and small-scale, loosely organized attempts at protest. A number of my informants did, however, expect a rise in rural violence related to problems caused by climate change, such as battles for water and arable land. As Beck suggests, there indeed also exists a trend to form new alliances, such as the one between church groups and environmental movements and the peasantry protesting mainly against actions of large agribusiness companies. However, there also seemed to be another form of resistance on the rise closely tied to the discourse on climate change, a moral stand defending agro-ecological farming and praising the environmental benefits of small, organic family farms. This use of moral 'superiority' in order to undermine the opponent has also been detected in other radical environmental

movements critiquing capitalism or multinational companies. (Lindholm 1998). I shall now turn to James Scott's theory of everyday peasant resistance in order to complement the theories of structural violence and risk society with a view of innovative ways of fighting for the rights of the poor beyond direct violence and passive resignation.

3.3 Weapons of the weak and resistance

In his book *Weapons of the Weak: Everyday Forms of Peasant Resistance*, James Scott observes the everyday covert forms of resistance used by Malaysian peasants in the 1970s. By everyday peasant resistance Scott refers to the constant struggle between the peasants and those who attempt to extract labor, food, taxes, rents, and interest from them. One important trait of peasant resistance in Malaysia, as in many other Third World countries, is that it is rarely formally organized activity, the existing peasant organizations usually being the creations of state officials and rural elites. (Scott 1985, 298). Since the green revolution, the region went through a number of structural changes, such as double-cropping and mechanization, which have produced a numerous, marginal, poor class of small farmers at the bottom of the heap, a well-off class of capitalist farmers at the top, and a significant middle peasantry in between. (Scott 1985, 71). These structural changes have resulted in new, everyday forms of oppression, paired with novel everyday forms of resistance. According to Scott, the ordinary weapons of relatively powerless groups consist not of overt protest, but of subtle forms of protest such as "foot dragging, dissimulation, desertion, false compliance, pilfering, feigned ignorance, slander, sabotage, and so on" (Scott 1985, xvi). This style of resistance can be described by contrasting, paired forms of resistance: on the one hand, everyday resistance, on the other hand, open defiance. An example of the former is the quiet process by which peasant squatters have often moved on plantation and state forest lands; of the latter a public invasion of land that openly challenges property relations. In terms of actual occupation and use, squatting may accomplish more than an openly defiant land invasion, even if the de jure distribution of property rights is in this case not publicly challenged. (Scott 1985, 32).

Another important feature of these more subtle forms of resistance is that they take place against a backdrop of moral and symbolic realms, although the benefits sought are more often than not material.

Scott notes that in Sedaka, the village he studied,

> the struggle between rich and poor is not merely a struggle over work, property rights, grain, and cash. It is also a struggle over the appropriation of symbols, a struggle over how the past and present shall be understood and labeled, a struggle to identify causes and assess blame, a contentious effort to give partisan meaning to local history. (Scott 1985, xvii).

There are competing discourses at work: the straightforward language of capitalist economic interests, profit maximization, accumulation and property rights, and the moral, tradition-tied discourse of the poor. This moral discourse of the poor forms something of a symbolic barrier to the cold capitalist logic, impeding the ethic legitimization of the practices of most well-off farmers in Sedaka. (Scott 1985, 234). What the poor peasants do is use the values and rationale of an earlier social order to press their claims and disparage the claims of their opponents. For example, they call the rich stingy and hardhearted whenever help in the form of charity is not given to them, and insist, albeit in vain, on their right to employment and to tenancies, which the large landowners claimed to bestow upon them out of a sense of helpfulness in the earlier social order.

Thus, the critique and discontent is directed at the local dominant elite, not the state or the policies behind the novel form of capitalist agriculture. (Scott 1985, 336). There is a trend of personalization at work, mediating the experiences of capitalism, imperialism, and the green revolution. The peasants do not choose to emphasize the larger causes of their difficulties, but this does not mean that they are unaware of these. Their enemies are not impersonal forces, but real people. (Scott 1985, 348). They are members of the same community, which also inevitably leads to the fact that conflicts have to be dealt with in a way that does not lead to open war within the community. As Scott points out,

> no matter how conscious members of a subordinate class may be of having gotten a raw deal, the daily pressure of making a living and the risks of open defiance are usually enough to skew the ethnographic record systematically in the direction of compliance, if not acceptance, of the inevitable (Scott 1985, 324).

Resignation to what seems inevitable may produce compliance, but this is not the same as according it legitimacy.

4 ANALYSIS

4.1 Structural violence in the *sertão* of Northeast Brazil

The aim of this subchapter is to prove that there indeed exists a situation that can be deemed structural violence in the hinterlands of Northeast Brazil, and to analyze the forms this violence takes. As has been noted earlier, all the institutions mentioned; the drought industry, land use questions already dating back to colonial times, the imagery of misery related to drought, government policies and nowadays increasingly, agribusiness, have played their part in creating and maintaining this construct. For centuries, as Galtung would put it, the 'topdogs' have been oppressing, benefiting from, and marginalizing the 'underdogs'. The situation has historical roots, is still persistent, there are institutions in place that reiterate and reinforce the structure and impede a part of the population from living a full life through restricting access to water and land. And, as Farmer would probably have hoped, in recent times this structural violence has come to be seen not only as an institutional problem, but a question of human rights through the climate change discourse.

4.1.1 The institutions behind inequality

As mentioned in earlier chapters, droughts are often blamed for social marginalization in Northeast Brazil. However, they can explain rural poverty only partially. It is the combination of periodic droughts, the social structure, and political realities that is at the root of marginalization and poverty. Even in times of normal rains, the "meager resource reserves are barely enough to meet their subsistence needs." (Arons 2004, 67; 72). As Scheper-Hughes notes, the region is still at a transitional stage of state formation, and home to many traditional and semi feudal structures, among these its legacy of local political bosses (*coroneis*) spawned by an agrarian *latifundista* class of plantation estate masters and their numerous dependents (Scheper-Hughes 1992, 222). Historically, civil liberties and human rights have been cast as privileges and favors bestowed by the local bosses on subordinates within relations structured by notions of

personal honor and loyalty (Scheper-Hughes 1992, 226). The legacy of sugar cane plantations, breeding on the one hand the almost omnipotent class of rich landowners, and on the other the masses of slaves and poor peasants, and in later days reinforced by the power of the *coroneis,* marks the framework of social relations in the region. The remnants of the drought industry are still perceptible today, albeit in a somewhat modified form.

The problem of structural violence was also repeatedly attributed to the unequal access to and division of land by my informants. Statements such as the following by Ricardo, a young man working for Caritas, abounded when talking with people living in the *sertão:*

> I think that the root of the inequality and the social problems in this area lies in the question of the distribution of land. There is now a lot of debate about limiting the size of the properties, but there are a lot of people, with capital, who oppose, even though their lands are not productive.[…] There is a lot of violence related to the history of the land… (Interview Pesqueira, PE, 06.10.2010).

Land reform was also seen in the seminars I attended as one of the most essential developments on the road to combating both the inequality of the social classes and future problems related to climate change. The concentration of both water and the most fertile lands in the hands of large estate owners underutilizing the land, or national and multinational companies, is giving rise to worry concerning food security and the viability of familiar agriculture, which to this day remains the ultimate source of subsistence for many people in the *sertão.* With future projections of the diminishment of arable land through desertification and unsustainable land use, and the decrease in water for production, the question of viable modes of agriculture in decades to come was brought up in both seminars as the number one issue that could prevent large-scale migration and famines.

When discussing the theme of land distribution with my informants, the question of agribusiness rose repeatedly as the 'new threat' to both sustainable land use and food security. Both national and multinational companies have been buying large plots of fertile land from both large estate owners and the state. What is interesting to note, is that there seems to be a continuum in this legacy of inequality regarding land rights, going back centuries to colonial times when land was handed out to aristocrats and prominent families for free. These lands first became large *fazendas*, then were

transferred down to the *coroneis*, and are nowadays mainly in the hands of the sons of these *coroneis*, many of them prominent businessmen or politicians, who are either underutilizing the lands or selling them to agribusiness companies. Thus, the framework has remained almost unchanged since the times of colonization, with new players entering the picture but sustaining the structure all the same.

The main worry regarding the rise of agribusiness is not only the concentration of land in the hands of these megabusinesses, but also their use of agrotoxins in farming and the health effects this might have, and the tendency towards monoculture which impoverishes the soil further. As the CPT representatives in Cajazeiras noted, the relation that these firms have with the land is not a sustainable one, and while the benefits reaped at the moment may be huge, this exploitative outlook may in a few decades lead to these lands becoming infertile wastelands. As Rafael from Pedra notes: "Unlike the city-people, we know and understand nature… we have learnt from it, for generations. And finally we get to use that knowledge, and sustain nature at the same time. But, God willing, we are still here, fighting" (Interview Pedra, PE 07.10.2010). There being no huge advances in the land reform debate as of yet, the access of small farmers to land and water may indeed become a severe problem in the future.

Another instance of old structures repeating themselves through new forms are the large infrastructure projects advanced by the government, earlier in the undertakings of the SUDENE and later with the San Francisco River transposition project. These were seen by many of my informants as nothing but a continuation of the drought industry. The large scale development schemes have as of yet not alleviated the problem of droughts in the area, but have caused displacements and environmental hazards, also mainly benefiting large estates or the agribusiness sector. As seen earlier, many people were of the opinion that these projects are nothing but a campaign to win political support and visibility. The large majority of small farmers and peasants have been marginalized from the river transposition project, gaining no benefit from it, and the critique directed towards it is going largely unheard.

4.1.2 Imagery and popular culture

One of the biggest factors at the root of the problem, as mentioned earlier, is the imagery related to drought, the *miséria da seca*. Although slowly changing in the hinterlands thanks to the efforts of social movements and various organizations, this imagery of the *sertão* is still very much alive, especially among city folk. Paula, a cleaner originally from Recife, described her impression of what life is like in the *sertão:*

> Oh those poor things, they have everything going against them, it is too hot to live there, the plants die, they are always hungry and always having to move. It is really a shame because they are hard-working people, the *sertanejos*, but life is simply too hard there. (Interview Recife, PE, 20.09.2010).

Father Alexandre from Caritas, stationed in Recife, also tried to warn me of what I would face on the field:

> You are going to see a lot of misery… Things are changing but the change is happening slowly and some people do not want it, so our job is not easy. You will find that it is completely different there to what you are used to, people live in mud huts, they have not got enough to eat always. But they are good Christians, always kind and welcoming, even towards those who use them… (Interview Recife, PE, 31.08.2010).

Although very poetic, the imagery has helped create and reinforce two myths. First of all, that the misery and poverty in the region results from a hostile environment, where the peasants and farmers become victims of what is often seen as a godly punishment. Second, that due to this image, any help or efforts at alleviating the situation on behalf of the government or local bosses have come to be seen as benevolent favors, that one must also pay back by supporting political agendas. Reflected in the *cordeis* and the testimonies of some of the people I interviewed, this image of the *sertanejo* tied to his land but at the mercy of others is at the background of institutions such as the drought industry, and has also for a long time impeded protest and critique of the prevailing social structure. As Galtung might say, the historical image of the *sertanejo* would appear to reflect certain outcomes of structural violence; there has indeed been a certain feeling of hopelessness and acceptance of the deprivation related to droughts among the peasants, that has endured over generations and been reinforced by the local bosses' actions leading to, among other things, the alienation of the masses from political

decision making. Once again, the frustration of the peasants is reflected in *cordeis* as well:

Promessas mirabolantes	*Tacky promises*
Falsas tapinhas nas costas	*False tappings on the back*
Indecorosas propostas	*Improper proposals*
Pra conquistar os votantes	*To win over the voters*
Vindos de terras distantes	*Coming from faraway lands*
Ou mesmo da região	*Or even from this region*
Políticos de ocasião	*Opportunist politicians*
Piratas da consciência	*Pirates of the conscience*
Nunca tiveram decência	*They never had the decency*
Pra trabalhar pro sertão	*To work for the sertão*

-Abdias Campos: "A chegada do Velho Chico ao sertão".

The role of popular local imagery and people's perceptions of themselves and others reflected in the arts is not to be undermined, as I have noted before. I argue that this is precisely the channel through which structural violence is 'normalized', and repeated through generations by the oppressed themselves. By incorporating the imagery into their self-perception, they also unintentionally naturalize it, and although in many ways may protest against it and find the oppressive structures unacceptable, on a symbolic level partake in its reinforcement. This is what the social movements have also paid attention to, and which has resulted in active campaigning to change this pessimistic image of misery and replace it with a more positive one.

4.2 Climate change and risk society: How to deal with 'invisible' threats

There appears to be a consensus, agreed on by the IPCC, experts on the field, and local laymen regarding climate change: it is happening, and is foreseen by all to have both natural and social consequences. In the future, the well-being of a large number of the population of the *sertão* may be in jeopardy due to diminishing agricultural yields, threats to health, and meager access to water, to name a few. Silvana's statement

reflects the general worry expressed by many of my informants regarding the future, as has been seen in previous chapters: “I am very worried about the future, because it is becoming worse, right? Because all the time the sun is becoming hotter and hotter. And this tendency will continue, they say. It will be frightening.” (Interview Venturosa, PE, 07.10.2010). The fact that these concerns are also global in character adds an interesting twist to the problematic, as for the first time the peasants and farmers of the Brazilian *sertão* form part of a world-wide community combating a common evil. I will return to the links between the climate change discourse and social movements later on in this chapter, focusing first on how the worry about climate change has risen so prominently to the foreground.

4.2.1 Cultural meanings of risk

In his theory of risk society, Ulrich Beck points to a change in the cultural meanings of risk that also brings about transformations in the social positions of different groups. Climate change obviously represents a ‘new’ risk, and one arising from modernization itself. In the case of the *sertão*, it is interesting to note how this novel risk of climate change has so naturally been incorporated to the framework of risks that has existed for centuries: droughts, famines, misery, and the question of migration. The critique directed against agrotoxin use by large companies also says a great deal about the idea of reflexive modernization: the health risks arising from the use of these toxins are ultimately threats posed by the advancement of knowledge, as it is scientific knowledge that is ultimately responsible for the development of these chemicals. The lack of spatiality or temporality of the new risks in question also undermines the social class system, as everyone is, to some extent, exposed to the danger. Despite this, following Beck’s supposition, it would appear that wealth accumulates at the top, risks at the bottom of the new dynamic in place. At the moment at least, agribusiness companies are reaping huge benefits, whereas the risks regarding unsustainable land use and the tendency of desertification will ultimately affect the small farmers most in the long run.

There is a large selection of potential risks, from which for a number of reasons climate change has risen to the foreground. Following Douglas’ and Wildavsky’s theory that risks are always socially defined, it can be argued that it is not only the severity of the

threat but also institutional factors that affect the amount of attention given to a risk. The three institutional types – market, hierarchy, and sect, all have a theory on what risks should be paid most attention to and how. In the case of climate change, it can be seen that it is the civil society and social movements that are most outspoken about the situation in the *sertão*, and try most fervently to come up with alternative solutions. It is the market and hierarchy, that is, the agribusiness companies and central political power that strive mostly for large infrastructural undertakings, without notable social change. That nature is not just for contemplation has been established earlier – it is also a battlefield of internal tensions and social critique. I believe that one of the reasons climate change has been chosen as a point of attention is the fact that it can be easily linked with other social struggles in the region as well. The fact that the risk posed by climate change is also an involuntary one, that is, not a risk consciously chosen by anyone, leads to judgments about accountability and mitigation of the effects. This brings the moral dimension to the discourse, which I will return to further on.

The question of accountability in the postmodern risk society is a complicated one. Beck argues that the institutions in place are no longer relevant and adequate to deal with control and decision-making. The rising 'new' powers, economic and scientific circles, would according to him replace the state as the key players in the globalizing world. In the case of undertakings such as the San Francisco River transposition, it seems that the centralized formal political system has allied itself with private economic interests, leaving the civil society to search for alternative solutions to combat the effects that droughts might have in the future. It may be argued that there has indeed been a realignment of both economic and 'resistance' camps. In the economic sphere the state and industry have paired up, whereas in the search for alternative development indigenous groups, environmentalists, and even the church have found each other. An example of this is the creation of umbrella organizations such as the ASA that unites evangelic and catholic church groups, environmental and development-centered NGOs, rural workers' associations, communitarian organizations and syndicates. (ASA 2010, 3).

Following Beck's theory, it does indeed seem that from the players involved, industry, or in this case agribusiness, has benefited the most: the formal political system is still seen as the one who should be held accountable and be responsible for regulation, the civil society has no real decision-making power, and the innovations introduced by

science, such as agrotoxins, genetically manipulated seeds, and novel irrigation systems, are eagerly taken to use by the companies. The problem of accountability is especially pronounced if one looks at the relation between legislation and reinforcement of laws: the country has a rather developed body of laws regulating environmental affairs, but due to lack of vigilance and reinforcement, in practice the private sector can operate quite freely and even ignore many of the regulations. The problem, on a more global scale as well, is that international environmental obligations arise from a body of 'soft law', that is legally non-binding conference resolutions, declarations and action plans. Another, more local challenge in the case of Northeast Brazil regarding environmental legislation is that people are not familiar with it, due to lack of information and education. (Campos 2009, 87). Thus, while international and regional environmental agreements do have the potential to limit state sovereign power and legislation, they are constantly torn between transboundary ecological goals and the state territorial boundaries of authority. (Mason 2001, 410-411). As it is the state that is ultimately responsible for law enforcement, no amount of legal regulations guarantees actual control of the situation.

Thus, Beck's idea of generalized non-responsibility seems to hold true in the case of Northeast Brazil quite well. The issue at hand, climate change, also by nature is one where it is practically impossible to lay blame or look for responsible ones, due to the problem's global character. Additionally, I would argue that in the case of Northeast Brazil, the historical lack of interest in the region's development on behalf of the central government has created a situation where for a long time the locals have ceased to expect much from the formal political system. The general opinion towards politics and politicians was one of disdain, and in the question of accountability and the state's obligations the attitude people have is mostly one of resignation. More than once I was told that "Brazil works like this", "it has always been this way", and although many agreed that it should indeed be the formal political system that should guarantee a certain level of well-being for the citizens, this would never happen.

This traditional limbo between not expecting anything from the state and also not actively fighting for their rights is, however, gradually changing with the climate change discourse. Before this discourse became popular, it could be said that there existed among the peasants something akin to what Beck refers to as the "death-reflex of normality", at least based on testimonies and the image portrayed through popular

culture. Although the problem of droughts was never denied, it was accepted as part of nature and life carried on despite of it. This does not mean, however, that there was no form of resistance whatsoever on the part of the peasants; I will return to this point in the next subchapter. It also does not mean that in the postmodern era of a global risk society the only changes would have been in the roles of the state, market and the civil society. I would argue that one of the biggest changes have been in the sphere of the popular imagery and culture concerning the *sertão*, reflected among other things in songs, cordel poetry, and the image locals have of themselves and their surroundings. New forms of resistance have risen to complement the former everyday 'weapons of the weak', that will be discussed shortly.

4.2.2 Power of knowledge

The role of knowledge remains a crucial issue when discussing climate change. Even if the phenomenon can to some extent be perceived by the senses, scientific knowledge is still the ultimate and accepted judge of what is happening now, and what will happen in the future. Thus, it is to a large extent scientific knowledge that defines the risk, and offers solutions based on these evaluations of the situation. Therefore, as Beck argues, in the risk society, science becomes the principal institution for defining and analyzing risks, and ultimately through these roles also legitimizes the measures taken to combat them. This is especially true in the case of climate change, as its definition rests solidly on scientific knowledge. It is precisely an invisible threat that has begun to be 'felt' only after experts have informed us of what is happening. The scientific foundation of the climate change discourse is especially evident in material for contextualized education in the *sertão*, through which NGOs attempt to build awareness among the communities for fighting the impacts of climate change. In one educational pamphlet, used in workshops among the small farmers' communities, climate change was explained as follows:

> There are many signs that the Earth is going through a big change: floods, droughts, winds, hurricanes, tsunamis, melting of glaciers in the sea and in the mountains, sea level rise, and higher temperatures that are unbearable. We know this because many educated people around the world have joined their knowledge in order to understand what is happening. Most of the work was done by the UN, in the Intergovernmental Panel on

> Climate Change. The studies, done with much care and responsibility, concluded that life on Earth is seriously threatened. (CNBB 2009, 9).

Thus, it is interesting to note is how this expert knowledge has become a part of layman discourse as well, reflected in the local perceptions. For example, the following excerpts from interviews conducted on the field show that there is an overlap between the beginning of ASA's awareness building campaigns in the *sertão*, and the time when the locals claim to have first started noticing the effects of climate change. The ASA was formed in 1999, and started concrete action on the field in different locations in the early 2000s. (Interview Pesqueira, PE, 06.10.2010).

Silvana, from Venturosa:

> The climate has changed completely, absolutely completely! It is a lot hotter, the temperatures are rising each year, the rains are irregular, it is this global warming. We are noticing the difference, it is clear. In the last 6-8 years we have started noticing these changes. (Interview Venturosa, PE, 07.10.2010).

Isabel, working for Caritas Brazil in Pesqueira:

> R: Have you noticed some changes in the climate, weather alterations for example?
>
> I: Yes, yes, we... actually we have been noticing that annually, the thing is, if we looked at the years 2004 to 2010, we notice a huge variation. What does that mean? The rains are each year more and more irregular, right? It is supposed to rain 5 months and it only rains 1 or 2, the rainy seasons are unpredictable, there is a very big change going on, right? And the thing is, this is what we have been reflecting upon in the communities, what these changes mean, and they are one reason for why we are constructing, as well. What is our reaction and action regarding all that, right, preservation, and this in the semiarid is an important thing mainly for rural communities, because land use is quite…complicated really. The farmers, many of them, have this culture of slash-and-burn agriculture, of leaving their plots completely stripped, right, of using a lot of agrotoxins. We know that all these things contribute to the process called desertification, right? And the thing is, here, in the municipalities where we work, there are some that already start to show alarming indexes of desertification, it is advancing rapidly. (Interview Pesqueira, PE, 05.10.2010).

Desertification, although foreseen to have serious impacts on the environment in the future, is still at the moment concentrated on very specific locations, and not yet very widespread. Despite this, it is clear that contextualized education, in other words simplified information deriving from international official reports such as those by the IPCC concerning climate change, has done its share in establishing the threat of desertification in the local's minds, as can be seen from the statement by Alberto from Petrolina:

> R: So, what do you think the climate will be like in 20 or 25 years from now?
>
> A: Worse. Everything will be worse regarding the climate in the Northeast. First of all, with desertification, with the extension of the sandbanks on the rivers, this tendency of desertification will only grow. The climate will become more and more irregular with the diminishment of waterways and forests. And desertification will in its turn raise the temperatures higher. (Interview Recife, PE, 12.08.2010).

Thus, in a very short period of time, the idea of global climate change, or what scientists have termed the "fingerprint" of the greenhouse effect, "has become firmly rooted in our world-view, a permanent component of the stories we tell each other about the interplay between natural and social laws that affects our everyday life and our picture of its future" (Ross 1991, 6). Although trends such as desertification, irregular rainfall and the rise in temperature are also felt by the farmers, the vocabulary they use to describe these phenomena is to a large extent borrowed from experts. As the *cordel* poetry quoted in various chapters of this study shows, new issues are finding their way into different forms of traditional popular culture, but the way they are portrayed is changing. Topics such as climate change, the San Francisco River transposition, etc. are taken up in the *cordeis*, but the language is less lyrical and more scientific than depictions of droughts and migrations from earlier times. I would argue that through this new discourse, a big part of the traditional popular imagery is changing altogether, as those who have formerly seen themselves as victims of a hostile environment harness scientific knowledge both to explain and combat the harms coming their way.

The importance of knowledge lies also in its power to integrate the *sertanejos* to the global climate change discourse. As Ross notes, the difference between the language of scientific expertise and the popular culture of experience is not a difference in kind, but is rather ranked on the scale of power, and "reflects real inequalities not only in the degree of power that different cultural groups have over their relation to the physical world, but also in each group's ability to make arguments that will affect that relation" (Ross 1991, 23-24). As shall be seen further on, the climate change discourse has given the peasants and farmers a new weapon to fight social inequality as well, and question age-old structures such as land distribution through a new perspective. The fact that climate change affects not only the poor but everyone to some extent legitimizes new arguments, and the social movements and NGOs have made contextualized education and awareness building an essential point in their actions on the field. Seminars and workshops abound both explaining climate change to the locals, and familiarizing them

with concrete techniques such as cistern building and use. Education was also mentioned by many as the number one factor in mitigating the effects of climate change in the future, as through it generations to come are hoped to have a lifestyle more favorable to sustainable development.

4.3 Resistance through green consciousness and agro-ecology

Tudo isso acabou, tudo isso acabou,	*That all ended, that all ended,*
tudo isso acabou, quando a ASA chegou	*that all ended when the ASA came*
Quero falar do menino,	*I want to tell you of the kid,*
que 'tava com barriga,	*who had his tummy bad,*
que com a canela fina nao comia nada nao,	*didn´t eat anything*
era um problema danada,	*It was a real problem,*
era grande a confusao, mas tudo isso acabou,	*the fight was hard,*
tudo isso acabou, tudo isso acabou,	*but that all ended, that all ended,*
quando a ASA chegou…	*that all ended, when the ASA came…*

The above are the lyrics of a song sung to me by Dona Aurelia, whose story is a good example of the empowerment and regaining of hope and self-esteem that the actions of NGOs and social movements have achieved in some cases in the region. Dona Aurelia has lived in the municipality of Aguas Belas in the state of Pernambuco all her life, and is well-known for her home-made herbal medicines, a trade passed on to her by her mother. She and her husband own a small farm, and have since childhood had a special relation to the land, reinforced through the knowledge of the curative properties the plants have to offer. But years ago Dona Aurelia fell into depression, and during 8 years she did could not bring herself to gather or look after the plants or the small farm. The yields were often destroyed by the droughts and the water they had for use was contaminated, further lowering Dona Aurelia's spirits. Then, in 2009, the family became a beneficiary of ASA's cistern program, with the help of which they received a cistern on their property. This animated Dona Aurelia once again to start planting medicinal herbs, and to start passing her knowledge on to others as well. She also

started, through song and poetry, analyzing her depression and noted soon that she was not only getting better but becoming once again solicited for the cures, benefiting the entire community. She explained that seeing how a simple solution, gathering rainwater "straight from the skies", restored her faith in the land and in the abilities that nature has to cure from illness. Noticing little by little that she also had an important role in the community, and possessed a skill that could well go forgotten did she not pass it on, also further restored her self-worth. (Interview Aguas Belas, PE, 06.10.2010).

4.3.1 Reviving the civil society: The role of NGOs in resistance

Discussing climate change with my informants invariably lead to talk about water scarcity and agriculture, and one of the main worries repeated by the majority was food security in the future. For a region with an unfortunate history of famines, guaranteeing food production is no minor detail: it is a question of life and death. As I explained previously, early on in the discussions I had with people the themes of a rising green consciousness and agro-ecological farming rose up, which was the main reason I decided to take up the offer presented by the NGO Caritas to visit the projects they were involved in, with the ASA in various localities in the *sertão* in the states of Pernambuco and Paraíba. The ASA is a network made up of approximately 750 organizations from the civil society, which partake in the management and development of policies in the semi-arid region. Its goal is to strengthen the actions of the civil society to promote sustainable growth by focusing on agro-ecology, on food and nutritional security, on contextualized education, on the struggle against desertification, on the access to land and to water and on the promotion of gender equality. (ASA 2010, 3). The projects I visited were called *Programa Um Milhão de Cisternas* ("One Million Cisterns-Program") and *Programa Uma Terra e Duas Águas* ("One Land, Two Waters-Program"). The former program focuses on supplying clean water for drinking, whereas the latter aims at guaranteeing food production. Thus, "one land", referring to land for production, and "two waters", referring to the two types of water: drinking water and water for the production of food. (ASA 2010, 12-17).

In recent decades there has been a huge growth in the number of NGOs and other civil society initiatives dealing both with water and food security questions, land rights issues, environmental justice, indigenous rights etc. Internationally, probably the most well-known of these movements is the MST, The Landless Peasants' Movement, representatives of which I did not have a chance to interview, unfortunately. According to several of my informants, this surge in civil society action has grown especially during the presidency of Luíz Inácio Lula da Silva, who, being from a farmer family from the state of Pernambuco himself, has given renewed faith in the eyes of the *nordestinos* to the region's development. As Gustavo states: "We are lucky, here in the Northeast, to have a farmer, from this area, as the president of the country. Lula has made huge changes, there has been a huge surge in social movements, since he came to power there have been enormous advances." (Interview Arcoverde, PE, 06.10.2010). The main endeavor of ASA and other organizations is precisely to find alternative, grass-roots solutions to not only promote sustainable development, but also to empower the peasants and promote political independence from the local bosses.

The relationship between civil society organizations such as the ASA, NGOs and church-affiliated groups and their direct beneficiaries is somewhat complicated. Often it is the organizations that choose the beneficiaries first, but the approach is not entirely a top-down one based on charity, as the beneficiaries tend to become activists for the cause themselves. NGOs often give a spark to social movements, and are the initial institutional vehicles that articulate social protest and collective action. (Fisher 1997, 451). Gustavo pointed this out by asking:

> Who is developing Brazil nowadays? – The voluntaries, the social movements. We are doing most of the work. The Northeast is not all about misery, this image that people have, even on the coast, is no longer true. Yes, in the past there was a lot of suffering, but that was during the time of the SUDENE, the carros pipas, all that… We may not have a lot, but we get by. Everything changed with ASA, with the government of Lula, with people themselves doing something… the Northeast has changed, really. (Interview Arcoverde, PE, 06.10.2010).

And to some extent, what 'the people are doing' seems to be working; Caio, working for Caritas in Pesqueira, explained that there are families who migrated in the past from the region, who are returning to their original homes thanks to the programs and a revived hope in life in the Northeast. (Interview Pesqueira, PE, 06.10.2010). What was felt to be needed in the future by Mariana, working for Caritas in Cajazeiras, Paraíba, was increased awareness building: "people still do not understand the importance of

agro-ecological farming… it is the simple things that will improve our health, our lives…and strengthen familiar agriculture." (Interview Cajazeiras, PB, 12.10.2010).

4.3.2 Changing forms of everyday resistance

There has been an interesting development in forms of everyday resistance used by the peasants in the region, some of which remind the ones described by Scott discussed in the previous chapter, and some that are more tied to the climate change discourse itself. The traditional covert forms of resistance in the *sertão* include squatting on lands owned by others, tapping into the San Francisco transposition canals, and what in Brazil is known as *jeitinho.* The *jeitinho* is a way to grease the wheels of government or the bureaucracy in order to obtain favors, or to bypass rules or regulations. *Jeitinhos* are neither exactly legitimate favors, nor clear corruption, but can be considered extra-legal deeds. (Greenfield in Levine *et al* 1999, 403). For example the political loyalty in elections related to the drought industry is one instance of *jeitinho*, especially in cases where a farmer or a peasant does not have the financial means to 'tip' an official or politician in order to obtain a favor. What is common to all the above forms of everyday resistance is, following Scott's theory, precisely the fact that they do not threaten the established social order, and although may not reflect an acceptance of this order, does imply a compliance with it. There is also a moral component to them, through which the legally doubtful means of resistance gain legitimacy in the eyes of the peasants: like Robin Hood stealing from the rich to the poor, they feel entitled to these covert forms of "taking their own" as victims of a social system that does not care for them, and a cold capitalist logic where the bigger players, be they agribusiness companies or local politicians and landowners, can overrun them.

Scott's conceptualization of the weapons of the weak thus includes certain characteristics that can be found in both the old and new forms of peasant resistance in the *sertão*. The protest is covert, subtle, and incorporates the moral and symbolic realms. Precisely by challenging symbolic constructs such as the *mito da seca*, drought myth, and replacing these with more optimistic images of the hinterlands, the locals are appropriating symbols and relabeling the present. In highlighting the caring and close relationship they have to the land, the peasants and small farmers are also legitimizing their demands on both a moral and a historical foundation. Linking these demands to a

global protest against cold capitalist logic and unsustainable environmental practices also give their arguments additional strength. The new element of resistance among the poor is the climate change discourse, as I have noted earlier on. The strength of this discourse lies above all in the moral realm connected to and in the scientific 'facts' supporting it. First of all, in international human rights parlance environmental rights have come to be seen in the last decades as a basic human right. Through the threat of climate change, there has also formed a global community defending green values and opposing rampant capitalist logic, into which the *sertanejos* have also incorporated themselves. The stressing of a unique and sustainable relationship with the land that the peasants have, the search for grass-roots level alternative solutions in farming techniques and irrigation, and the critique toward agrotoxin use are all instances of this moral discourse.

Through the concern about the planet's future, the *sertanejos* have also gained a weapon to question social inequalities. Following Brosius, I argue that in the case of the *sertão,* environmental debates are incorporated to broader struggles for democratization and rights. The traditional structures of domination, such as land distribution, are thus being challenged using the language of environmentalism. (Brosius 1999, 287). The appropriation of scientific language by the peasants, and the change from 'combating' droughts to 'living with them' *(combate vs. convivência)* reflects the change in imagery and local culture, where a hostile environment is being blamed less and more emphasis is put on the social structure. This change in paradigm also shows in a new feeling of empowerment by those participating in the social movements demanding environmental rights, where former 'victims' are becoming active participants in voicing out concerns related to climate change. I would argue that there is a transformation going on in this symbolic realm of knowledge production and imagery, where the historical image of the *sertão* is gradually being replaced by a more positive and optimistic view by the peasants and farmers themselves.

5 CONCLUSIONS

In this study, I have approached the problem of poverty in the hinterlands of Northeast Brazil through the concept of structural violence, linking the environmental threats posed by climate change, especially those related to droughts, to the broader social struggles in the region. I have focused on both layman and expert perceptions on climate change, and questioned the assumptions about its effects in the future, mainly that of increased numbers of 'climate refugees' or people forced to migrate due to changes in climate. The focus on droughts, as opposed to other manifestations of climate change, arose from the fact that droughts are not only phenomena that develop over a longer time span than floods or hurricanes, for example, but also due to the historical persistence of droughts in the region, and both the institutional and cultural linkages that have evolved around it. The instances of structural violence that I chose to highlight in this study are the drought industry, land use, and the social and power relations present in the region, including those between the civil society, the state and the private agribusiness sector. These all work against a backdrop of symbolic and moral realms of value production, where relations between the different actors are being negotiated anew with the rise of the climate change discourse.

The choice to use structural violence as the initial theoretical framework through which I have approached poverty was inspired by the fact that it takes more into account the power relations underlying poverty than theories dealing with the issue purely as material needs deprivation. When discussions about potentials and rights are incorporated into the problematic of poverty, a deeper insight is obtained regarding the various factors behind the phenomenon. It is generally believed that climate change is affecting the already marginalized and poor more than the wealthy or those of higher social standing, and will increasingly do so in the future. Thus, I find it fruitful to discover the links between environmental concerns and poverty, as the risk of climate change has in recent decades become one of the most discussed threats faced by the entire global community, a large majority of which lives in poverty. Also, the persistent poverty and 'backwardness' of the region hint that there are long-standing institutions in place which reiterate the problem on an intergenerational scale, and cultural understandings, reflected, as I have shown, in popular art forms as well, naturalizing the situation. Differing from Farmer, I however argue that it is not the neoliberal economic

regime that is the culprit as such, but the structural model originating already from times of colonization; the structure remains, but different players and ideas fill the slots in different historical periods. We should also not underestimate the power of the symbolic domain of 'myths', such as *mito da seca*, that has justified certain oppressive institutions such as the drought industry to remain in place for so long. All in all, I feel that the theory of structural violence is apt to explain the roots of the problem, and inquiring into these roots sheds light on the different aspects of the present situation. However, its focus on the state's role, its rather abstract character and its dismissal of the 'victims' own involvement in the reiteration of the structures, and in their resistance of them, makes it insufficient to explain the whole picture.

To make the theoretical framework more temporally tied to the postmodern era of globalization and transnational threats, I find the ideas of Beck and others regarding risk society very useful. In the era of global ecological hazards, power-relations are being redefined and new actors including the scientific community, the civil society and multinational companies are gaining more and more ground in relation to the nation-state. The shift from wealth-distribution to risk-distribution also marks an important transformation in relations between different social groups. One of the most important features of the contemporary times is the increased role of knowledge, as has been seen earlier on. The social definition of risks and contests about which risks are focused on and who defines them, is a good example of how knowledge relates to power. Scientific knowledge has become an instrument of power, seeked by both experts and laymen alike. In the case of climate change discourse, knowledge not only justifies critique, but also legitimates action: green consciousness has been the foundation for social critique among the peasants and small farmers in the *sertão* of Northeast Brazil, and has also given additional impetus to question and begin transforming age-old popular imagery. Also, the fact that the climate change discourse has a global character links local communities and their struggles to a global alliance of critique. New alliances have also formed locally, on the field, as I have shown: on the one hand, church groups, peasants and environmental movements have found common ground; on the other hand, private agribusiness companies and the state drive for large-scale technological undertakings benefiting both.

What seems to have changed with the arrival of the climate change discourse in the hinterlands of Northeast Brazil is a new sort of positive resistance by the peasants and

social movements, based on moral arguments about the importance of environmentally sustainable farming, paying attention to health risks originating from the use of agrotoxins, and return to solidarity. All these are exemplified in the trend towards agro-ecological farming discussed earlier, where all the aforementioned elements are combined to form an alternative solution to agribusiness that is both environmentally friendly, organic, and boosts traditional cultural values through an emphasis on family farms. Scientific 'facts', and contextualized education have been key factors in this new trend, and have largely been appropriated by the communities as arguments through which they question other social concerns as well. Linking the theory of peasant resistance advocated by Scott to the idea of structural violence in the era of risk society therefore adds the missing component to the picture: the action of the people involved. It is not only abstract structures and global trends such as globalization or economic regimes that direct the course of people's lives: they do actively participate in this process themselves as well. As I have mentioned, forms of resistance similar to those described by Scott, everyday, covert "weapons of the weak", have existed in the region for a long time. These have included squatting on lands owned by someone else, tapping into the San Francisco River transposition canals already in place, and the *jeitinho*. What is common to these forms of resistance, although also backed by moral conceptions of what is 'right' is that they do not defy the prevalent social structure as such.

However, the climate change discourse, albeit not resulting in open defiance in most cases, questions the underlying historical institutions as well, including land distribution and the power of the *politicos*- all this in the name of 'common good'. The forms of resistance emerging in the case of the hinterlands of Northeast Brazil thus also lead to questioning the suppositions put worth by scientists and the media concerning the future social effects of climate change. As I noted in the introduction, the general consensus seems to hold that we are to prepare for huge migratory movements of 'climate refugees', whereas the data I gathered on the field would, at least in the region in question, point to the opposite trend. Even with the difficulties posed by climate change to agriculture, it seems that rural-to-urban migration has on the whole diminished, not increased, and when prevalent is happening for entirely different reasons. Whereas in the past the droughts did indeed drive the 'afflicted' to the cities in search of a meager subsistence, as we have seen by testimonies and numerous fiction and non-fiction

descriptions of this era, nowadays it is mainly education and urban work opportunities that attract especially the younger generations from the countryside to the city. The idea of adapting to, or 'living with' (*convivência)* the semi-arid advocated by the social movements, NGOs and to an increasing degree public authorities has fortified faith in staying on the land, and simple technological innovations such as the cisterns are also making it more viable an alternative these days, even with the challenges posed by climate change. The global estimates about a rise in the number of mass migrations due to climate change may obviously become a reality in some regions, but these grand projections fail to take into consideration the innovative solutions people find to problems facing them, and the ways that culture and action is capable of adapting to a changing environment. This is not to say, obviously, that climate change does not imply challenges and concerns for those living in the semi-arid region of Northeast Brazil. As we have seen, the access to land is still a huge problem, and although the arrival of cisterns, agro-ecological farming and other innovations does facilitate staying on the farms for those who already have land, the ranks of the landless are ever-growing, also due to population growth in the last decades.

The question of land was also seen by many to be the root cause of other emerging social problems: with the arrival of foreign and national agribusiness companies, there has been a parallel trend of industrialization in the rural centers of the semi-arid region. This industrialization has also led to a 'semi-urbanization' of these centers, small towns that are now starting to face urban problems in a rural setting. Many of my informants attributed the increase in youth crime, drug abuse, and violence to this trend. Although not directly linked to climate change, but more so to the selling of land at cheap prices to the agribusiness companies, these tendencies of 'city-problems' arrival in the *sertão* were a genuine concern. This shows that not only to ensure survival in the face of climate change, but also to curb emerging social problems, it is essential to act on the question of unequal land distribution in the future.

To conclude, in this study I hope to have shown that there are a number of interesting interrelations between environmental concerns and both power and social relations. These relations in turn unfold against a backdrop of both moral and symbolic realms of value production, which influence significantly the production of knowledge and imagery. Taking the concept of structural violence and linking it to environmental hazards may have seemed far-fetched initially, but I argue that the analytical concept is

very useful in the study of poverty to highlight the institutional aspects of the problem, and that the theory can and should be used more extensively. Anthropological studies of poverty should, I argue, take the links between the natural and social environments more into consideration, and increasingly focus on threats such as climate change, that can in the future affect the lives of everyone drastically, and in unforeseeable ways. I also argue that anthropologists should definitely follow, and reflect upon in their studies, the rising trends in society. Climate change has been a topic of popular discussion for decades, yet I found surprisingly few Finnish anthropological studies dealing with it. Environmental topics on the whole were upsettingly underrepresented in anthropological academic studies in Finland, so there is a lot of terrain to cover in this field in the future.

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José, researcher on desertification in the Federal University of Pernambuco, Department of Geography, interviewed in Recife, PE, 23.08.2010.

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Appendix 1: List of acronyms

ASA: The Half-Barren Articulation (Articulação no Semi-Árido).

CEPAL: The Economic Commission for Latin America and the Caribbean (Comisión Económica para América Latina y el Caribe).

CIMI: The Indigenous Missionary Council (Conselho Indigenista Missionario).

CNBB: The National Conference of Brazilian Bishops (Conferência Nacional dos Bispos do Brasil).

COEP: Committee of Entities Against Hunger and For Life (Comitê de Entidades no Combate à Fome e pela Vida).

CPT: Pastoral Land Commission (Comissão Pastoral da Terra).

ENSO: El Niño- Southern Oscillation.

FIAN: FoodFirst Information and Action Network.

GCM: General Circulation Model.

IBGE: Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estadística).

IFOCS: Federal Inspectorate of Anti-Drought Works (Inspectoria Federal de Obras Contra as Secas).

IPCC: The Intergovernmental Panel on Climate Change.

MPA: Small Farmers' Movement (Movimento dos Pequenos Agricultores).

MST: The Landless Peasants' Movement (Movimento Sem Terra).

PAE-PE: The State Action Program against Desertification and Mitigation of the Effects of Droughts – Pernambuco (Programa de Ação Estadual – Pernambuco).

PE: Pernambuco.

PB: Paraíba.

PNMC: The National Climate Change Policy (Plano Nacional sobre Mudança do Clima).

SECTMA: The Secretariat of Technological Sciences and Environment (Secretaria de Ciências de Tecnologia e Meio Ambiente).

SRH: The Secretariat of Hydraulic Resources and Energy (Secretaria de Recursos Hídricos e Energéticos).

FIOCRUZ: Oswaldo Cruz Foundation (Fundación Oswaldo Cruz); research institute attached to the Brazilian Ministry of Health.

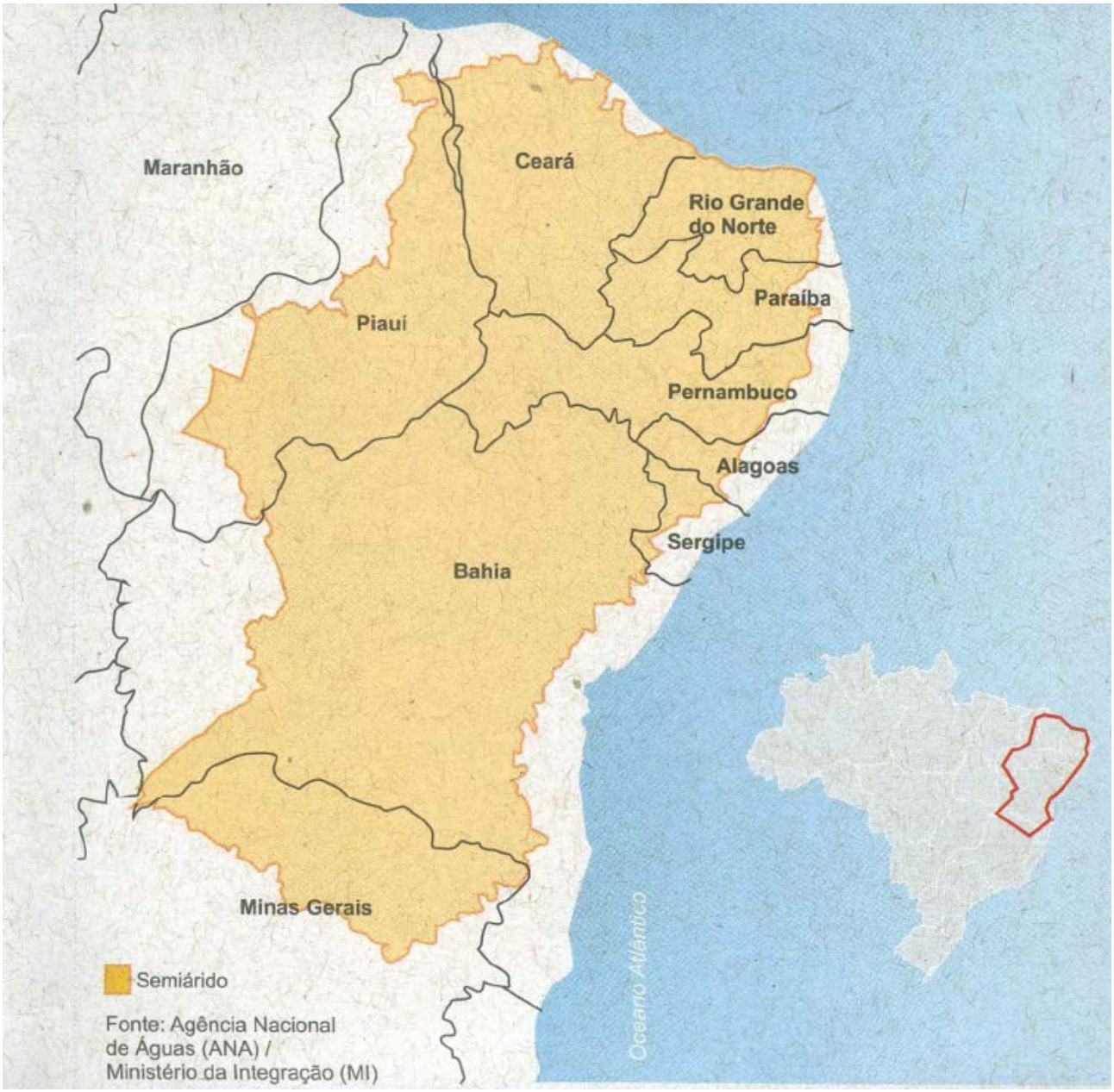
UFPE: Federal University of Pernambuco (Universidade Federal de Pernambuco).

SUDENE: The Superintendency for the Development of the Northeast (Superintendência de Desenvolvimento do Nordeste).

UFCG: The Federal University of Campina Grande (Universidade Federal de Campina Grande).

UNCCD: United Nations Convention to Combat Desertification.

Appendix 2: Map of the *sertão*



(Source: Agência Nacional de Águas in ASA 2010,5).

Appendix 3: Photo of *carro pipa* (with permission by the CPT, Cajazeiras, PB) and cistern (photo taken in Águas Belas, PE.)

Appendix 4: Painting *"Fugindo da Seca"* by J. Miguel, 2007.